

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 10,0 S
 Edition : 14.02.92
 Replaces : 04.91
 Test oil : ISO-4113

Combination no. : 0 403 446 250

Injection pump
 Pump designation : PES6MW100/320RS1194
 EP type number : 0 413 406 186
 Governor
 Governor design. : RQV300...1300MW108K
 Governer no. : 0 420 083 998

Customer-spec. information

Customer : PERKINS

Engine : 180 TI

1st version kW : 134.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 12.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 10.00...10.40

2nd speed rpm : 900

travel mm : 6.40...6.60

3rd speed rpm : 480

travel mm : 3.10...3.70

4th speed rpm : 300

travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 134.0...136.0

1000 : (132.0...138.0)

| | | | |
|---|-----------------|----------|---------------------------------|
| Spread | cm ³ | : 3.50 | Rack travel in m: 10.40...10.50 |
| | 1000 | : (6.00) | 2nd pressure hPa : 220 |
| RATED SPEED | | | |
| 1st version | | | |
| Control lever | | | Rack travel in m: 10.90...11.20 |
| position degrees: | 118...126 | | 3rd pressure hPa : 900 |
| Testing: | | | |
| 1st rack travel in: | 13.30 | | Rack travel in m: 11.70...11.90 |
| Speed rpm | : 1340...1350 | | |
| 2nd rack travel in: | 4.00 | | |
| Speed rpm | : 1480...1510 | | |
| 4th rack travel in: | 1600 | | |
| Speed rpm | : 0.00...1.00 | | |
| LOW IDLE 1 | | | |
| Control lever | | | |
| position degrees: | 70...78 | | |
| Setting point w/out bumper spring | | | |
| Speed rpm | : 300 | | |
| Rack travel in mm: | 6.2 | | |
| Testing: | | | |
| Speed rpm | : 200 | | |
| Minimum rack trave: | 7.50 | | |
| Speed rpm | : 300 | | |
| Rack travel in mm: | 6.10...6.30 | | |
| CONSTANT REGULATION | | | |
| Speed rpm | : 330...500 | | |
| TORQUE CONTROL | | | |
| Torque control curve - 1st version | | | |
| 1st speed rpm | : 1300 | | |
| Rack travel in m: | 14.30...14.40 | | |
| 2nd speed rpm | : 800 | | |
| Rack travel in m: | 13.10...13.30 | | |
| 3rd speed rpm | : 500 | | |
| Rack travel in m: | 11.70...11.90 | | |
| 4th speed rpm | : 1000 | | |
| Rack travel in m: | 13.60...13.90 | | |
| 5th speed rpm | : 700 | | |
| Rack travel in m: | 12.60...12.90 | | |
| Aneroid/Altitude Compensator Test | | | |
| 1st version | | | |
| Setting | | | |
| Speed rpm | : 500 | | |
| Pressure hPa | : - | | |
| Rack travel mm | : 9.90...10.00 | | |
| Measurement | | | |
| Speed 1/min | : 500 | | |
| 1st pressure hPa | : 180 | | |
| START CUT-OUT | | | |
| Speed 1/min | : 240 (250) | | |
| FUEL DELIVERY CHARACTERISTICS | | | |
| 1st version | | | |
| Aneroid pressure h: | 900 | | |
| Speed rpm | : 800 | | |
| Del.quantity cm ³ / | : 126.0...129.0 | | |
| 1000 s: | (123.5...131.5) | | |
| Spread cm ³ | : 5.00 | | |
| 1000 s: | (7.0) | | |
| Aneroid pressure h: | - | | |
| Speed rpm | : 500 | | |
| Del.quantity cm ³ / | : 77.0...79.0 | | |
| 1000 s: | (75.0...81.0) | | |
| BREAKAWAY | | | |
| 1st version | | | |
| 1mm rack travel less than | | | |
| full load rack tr: | 13.30 | | |
| Speed rpm | : 1340...1350 | | |
| STARTING FUEL DELIVERY | | | |
| Speed rpm | : 100 | | |
| Del.quantity cm ³ / | : 90.0...100.0 | | |
| 1000 s: | (87.0...103.0) | | |
| Rack travel in mm: | 19.00...21.00 | | |
| LOW IDLE | | | |
| Speed rpm | : 300 | | |
| Rack travel in mm: | 6.10...6.30 | | |
| Del.quantity cm ³ / | : 14.0...18.0 | | |
| 1000 s: | (11.5...20.5) | | |
| Spread cm ³ | : 3.50 | | |
| 1000 s: | (5.50) | | |
| Remarks: | | | |
| | : | | |
| Start-of-delivery blocking 46.5° before start of delivery of cylinder 1 | | | |

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA8,1D1
 Edition : 31.01.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 284

Injection pump
 Pump designation : PES6MW100/720RS1197
 EP type number : 0 413 406 185
 Governor
 Governor design. : RQV325...1250MW109-1
 K
 Governer no. : 0 420 083 995

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6090
 1st version kW : 167.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

| | | |
|-----------------------------------|-----------------|---------------|
| 1st speed | rpm | : 1250 |
| Rack travel in mm : 14.50...14.60 | | |
| Del.quantity cm ³ / | | : 10.5...10.7 |
| 100 s: (10.3...10.9) | | |
| Spread | cm ³ | : 0.3 |
| 100 s: (0.6) | | |

| | | |
|--------------------------------|-----------------|-------------|
| 2nd speed | rpm | : 325.0 |
| Rack travel in mm : 7.4...7.6 | | |
| Del.quantity cm ³ / | | : 2.0...2.4 |
| 100 s: (1.7...2.6) | | |
| Spread | cm ³ | : 0.3 |
| 100 s: (0.5) | | |

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 1400
 travel mm : 10.00...10.40
 2nd speed rpm : 825
 travel mm : 4.90...5.10
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del.quantity : 105.0...107.0
 1000 : (103.0...109.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.50
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 200
Minimum rack trave: 9.50
Speed rpm : 325
Rack travel in mm : 7.40...7.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.50...14.60
2nd speed rpm : 1100
Rack travel in m: 14.20...14.40
3rd speed rpm : 900
Rack travel in m: 13.70...13.90
4th speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 700
Rack travel in m: 12.80...13.10
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000

Speed rpm : 1100
Del.quantity cm3/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...60.0
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 5
 Edition : 30.04.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 403 446 300

Injection pump
 Pump designation : PES6MW100/320RS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RQV300...1300MW80-7
 Governer no. : 0 420 083 267

Customer-spec. information

Customer : RVI

Engine : MIDS 060212B

1st version kW : 117.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm³/

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.60...6.00
 Del.quantity cm³/

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----|----------------|
| 1st speed | rpm | : 1480 |
| travel mm | | : 9.60...10.00 |
| 2nd speed | rpm | : 1350 |
| travel mm | | : 8.70...8.90 |
| 3rd speed | rpm | : 500 |
| travel mm | | : 3.30...3.90 |
| 4th speed | rpm | : 300 |
| travel mm | | : 1.20...1.60 |

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

| | | |
|---------------------|-----------------|-----------------|
| Speed | rpm | : 1300 |
| Aneroid pressure h: | | 700 |
| Del.quantity | | : 88.0...90.0 |
| 1000 | | : (86.0...92.0) |
| Spread | cm ³ | : 3.50 |
| 1000 | | : (6.00) |

RATED SPEED

1st version
 Control lever
 position degrees: 125...133

Testing:

1st rack travel in: 9.80
Speed rpm : 1395...1405
2nd rack travel in: 4.00
Speed rpm : 1485...1515
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.60...6.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.20
2nd pressure hPa : 180
Rack travel in m: 10.35...10.45
3rd pressure hPa : 120
Rack travel in m: 9.70...9.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1395...1405

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...6.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark mode with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 117JD

Injection pump
 Pump designation : PES6MW100/120RS1178
 EP type number : 0 413 406 160
 Governor
 Governor design. : RSV350...1250MW2A332
 -3
 Governer no. : 0 420 085 152
 Cust. part no. : 3913734

Customer-spec. information
 Customer : CDC

Engine : 6 CTA

1st version kW : 186.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 017

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.10
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1255...1285
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 14.00
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 29...37
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 215
Rack travel in m: 11.60...11.80
3rd pressure hPa : 390
Rack travel in m: 13.00...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 92.5...96.5
1000 s: (90.5...98.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 23.5...27.5
1000 s: (21.5...29.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 28.02.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 474 023
 Injection pump
 Pump designation : PES4MW100/720RS1212
 EP type number : 0 413 404 114
 Governor
 Governor design. : RSV350...1300MW0A329
 -13
 Governor no. : 0 420 085 191
 Customer-spec. information
 Customer : MB-NFZ
 Engine : OM 364 LA
 1st version kW : 100.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test Lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32
 Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

| | | |
|-----------------------------------|-----------------|---------|
| 1st speed | rpm | : 1280 |
| Rack travel in mm : 13.20...13.30 | | |
| Del.quantity cm ³ / | | |
| 100 s: (9.9...10.5) | | |
| Spread | cm ³ | : 0.3 |
| 100 s: (0.6) | | |
| 2nd speed | rpm | : 350.0 |
| Rack travel in mm : 6.5...6.8 | | |
| Del.quantity cm ³ / | | |
| 100 s: (0.7...1.6) | | |
| Spread | cm ³ | : 0.3 |
| 100 s: (0.5) | | |

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 700
 Del.quantity : 101.0...103.0
 1000 : (99.0...105.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever position degrees: 114...122

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 82...90
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.6

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 12.30...12.50
3rd pressure hPa : 700
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 20.03.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 476 117

Injection pump
 Pump designation : PES6MW100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV750...1200MWA329
 -15
 Governor no. : 0 420 085 193

Customer-spec. information

Customer : MB-NFZ

Engine : OM366LA
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 5.8...6.3

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Aneroid pressure h: 1000

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20

Speed rpm : 1230...1235 *
2nd rack travel in: 4.00
Speed rpm : 1310...1318
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 500
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20

Speed rpm : 1230...1235
STARTING FUEL DELIVERY
Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE
Speed rpm : 750
Rack travel in mm : 5.80...6.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
:
Test hydr. locking device for starting
with 800...1200 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min-1 to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 403 476 118

 Injection pump
 Pump designation : PES6MW100/720RS1217-
 1
 EP type number : 0 413 406 214
 Governor
 Governor design. : RSV325...1200MW0A349
 Governor no. : 0 420 085 194

 Customer-spec. information
 Customer : MWM

 Engine : TD 226 B 6

 1st version kW : 118.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

 Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 047

 Inlet press., bar : 1.50

 Test nozzle holder
 assembly : 0 681 343 009

 Opening
 pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

 Prestroke mm : 4.00...4.10
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 750

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.20
Speed rpm : 1220...1230
2nd rack travel in: 4.00
Speed rpm : 1240...1270
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 9.20...9.30
2nd speed rpm : 750
Rack travel in m: 10.00...10.10
3rd speed rpm : 1025
Rack travel in m: 9.50...9.80

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.50...8.60

Measurement
Speed 1/min : 500

1st pressure hPa : 270
Rack travel in m: 9.10...9.20
2nd pressure hPa : 350
Rack travel in m: 9.50...9.80
3rd pressure hPa : 750
Rack travel in m: 10.00...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750
Speed rpm : 750
Del.quantity cm3/ : 104.5...107.5
1000 s: (102.0...110.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.20
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 119
 Injection pump
 Pump designation : PES6MW100/720RS1217-
 EP type number : 0 413 406 214
 Governor
 Governor design. : RSV325...1200MW0A349
 Governor no. : 0 420 085 195
 Customer-spec. information
 Customer : MWM
 Engine : TD 226 B 6
 1st version kW : 136.0
 Rated speed : 2400
TEST BENCH REQUIREMENTS
 Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.10...10.20

Del.quantity cm³/

100 s: (11.1...11.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 750

Del.quantity : 113.0...115.0

1000 : (111.0...117.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.10
Speed rpm : 1220...1230
2nd rack travel in: 4.00
Speed rpm : 1250...1280
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.10...10.20
2nd speed rpm : 750
Rack travel in m: 10.80...10.90
3rd speed rpm : 1025
Rack travel in m: 10.30...10.60

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.50...8.60

Measurement

Speed 1/min : 500

1st pressure hPa : 270
Rack travel in m: 9.10...9.20
2nd pressure hPa : 450
Rack travel in m: 9.90...10.20
3rd pressure hPa : 750
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750
Speed rpm : 750

Del.quantity cm³/ : 121.5...124.5
1000 s: (119.0...127.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 087 431

Injection pump
 Pump designation : PES6P120A720RS3256-2
 EP type number : 9 400 087 ...
 Governor
 Governor design. : RQV300...1300PA96J-2
 Governor no. : 9 420 080 285

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366 LA

1st version kW : 141.7
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----|----------------|
| 1st speed | rpm | : 300 |
| travel mm | | : 0.80...1.30 |
| 2nd speed | rpm | : 660 |
| travel mm | | : 3.80...4.30 |
| 3rd speed | rpm | : 960 |
| travel mm | | : 5.20...5.70 |
| 4th speed | rpm | : 1357 |
| travel mm | | : 8.00...8.50 |
| 5th speed | rpm | : 1492 |
| travel mm | | : 9.80...10.30 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 1385
Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 0.50...0.70
2nd pressure hPa : 1200
Rack travel in m: 1.10...1.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 115.0...119.0
1000 s: (112.0...122.0)
Spread cm³ : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm³/ : 56.0...58.0
1000 s: (53.0...61.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 i 5
 Edition : 30.04.92
 Replaces : 09.91
 Test oil : ISO-4113

Combination no. : 9 400 087 450

Injection pump
 Pump designation : PES6P120A720RS3256-2
 EP type number : 9 400 087 ...
Governor
 Governor design. : RQV300...1300PA978
 Governer no. : 9 420 080 296

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366 LA

1st version kW : 126.8
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|----------------|
| 1st speed | rpm | : 300 |
| | travel mm | : 0.80...1.30 |
| 2nd speed | rpm | : 660 |
| | travel mm | : 3.80...4.30 |
| 3rd speed | rpm | : 960 |
| | travel mm | : 5.20...5.70 |
| 4th speed | rpm | : 1357 |
| | travel mm | : 8.00...8.50 |
| 5th speed | rpm | : 1492 |
| | travel mm | : 9.80...10.30 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 1385
Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 0.30...0.50
2nd pressure hPa : 1200
Rack travel in m: 0.70...0.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 115.0...119.0
1000 s: (112.0...122.0)
Spread cm³ : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm³/ : 63.0...65.0
1000 s: (60.0...68.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery blocking at 4.05 mm
after cyl. 1 start-of-delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 07.05.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R381-2
 Type number : 0 460 426 154
 Customer Part-No. : 391 6974

Customer-specific information
 Customer : CDC

Engine : 6 BT - 5.9

Power KW: 92.5
 Speed 1/min: 2400

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)

Outlet : 0

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.40...3.80
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.50...4.10
 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000S.: 62.50...63.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 340
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1265
 Del. quantity cm³/
 1000S.: 42.50...48.50
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 75.00...125.00
 mind 1000S.: 75.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 5.60...6.40
 mm: (5.30...6.70)
 Shutoff electromagnet Volt: 12

| | | |
|--|-------------------|--|
| 3rd speed | 1/min: 750 | Del. quantity cm ³ /: 42.50...48.50 |
| TD travel | mm: 3.40...3.80 | 1000s.: (39.50...51.50) |
| | mm: (2.90...4.30) | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 4th speed | 1/min: 500 | 9th speed 1/min: 1200 |
| TD travel | mm: 1.50...2.30 | Shutoff |
| | mm: (1.20...2.60) | electromagnet Volt: 12 |
| Shutoff | | Del. quantity cm ³ /: 59.50...62.50 |
| electromagnet Volt: | 12 | 1000s.: (58.00...64.00) |
| Supply-pump pressure characteristic: | | 10th speed 1/min: 1100 |
| 1st speed | 1/min: 500 | Shutoff |
| Supply-pump | | electromagnet Volt: 12 |
| pressure | bar: 2.40...3.00 | Del. quantity cm ³ /: 60.50...63.50 |
| Shutoff | | 1000s.: (58.50...65.50) |
| electromagnet Volt: | 12 | 12th speed 1/min: 750 |
| 2nd speed | 1/min: 750 | Shutoff |
| Supply-pump | | electromagnet Volt: 12 |
| pressure | bar: 3.50...4.10 | Del. quantity cm ³ /: 62.50...63.50 |
| Shutoff | | 1000s.: (60.00...66.00) |
| electromagnet Volt: | 12 | 20th speed 1/min: 500 |
| 3rd speed | 1/min: 1100 | Shutoff |
| Supply-pump | | electromagnet Volt: 12 |
| pressure | bar: 4.80...5.40 | Del. quantity cm ³ /: 55.00...63.00 |
| Shutoff | | 1000s.: (53.00...65.00) |
| electromagnet Volt: | 12 | Mech. shutoff: |
| Overflow quantity at overflow valve: | | Mech. Abstellung: |
| 1st speed | 1/min: 500 | 1st speed 1/min: 1100 |
| Shutoff | | Del. quantity cm ³ /: 0.00...3.00 |
| electromagnet Volt: | 12 | 1000s.: (0.00...3.00) |
| Overflow | : 41.70...83.40 | Shutoff |
| quantity cm ³ /10s: | (36.70...98.40) | electromagnet volt: 12 |
| 2nd speed | 1/min: 1200 | Electr. shutoff: |
| Shutoff | | 1st speed 1/min: 340 |
| electromagnet Volt: | 12 | Del. quantity cm ³ /: 0.00...3.00 |
| Overflow | : 55.60...139.00 | 1000s.: (0.00...3.00) |
| quantity cm ³ /10s: | (40.60...153.00) | Shutoff |
| Delivery-quant. and breakaway char.: | | electromagnet volt: - |
| 2nd speed | 1/min: 1350 | Idle delivery: |
| Shutoff | | 1st speed 1/min: 340 |
| electromagnet Volt: | 12 | Shutoff |
| Del. quantity cm ³ /: 0.00...3.00 | | electromagnet Volt: 12 |
| 1000s.: (0.00...3.00) | | Del. quantity cm ³ /: 8.00...14.00 |
| 3rd speed | 1/min: 1280 | 1000s.: (6.00...16.00) |
| Shutoff | | Dispersion cm ³ /: 5.5 |
| electromagnet Volt: | 12 | 1000s.: (7.0) |
| Del. quantity cm ³ /: 15.00...55.00 | | 2nd speed 1/min: 500 |
| 1000s.: (15.00...55.00) | | Shutoff |
| Shutoff | | electromagnet Volt: 12 |
| electromagnet Volt: | 12 | Del. quantity cm ³ /: 0.00...4.00 |
| 5th speed | 1/min: 1265 | 1000s.: (0.00...4.00) |
| Shutoff | | Automatic starting fuel delivery: |
| electromagnet Volt: | 12 | 1st speed 1/min: 130 |

Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

2nd speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...80.00
1000s.: (30.00...80.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 75.00...125.00
1000s.: (75.00...125.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 1.2...1.6

SVS max. mm: 1.7

Remarks:

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 06.05.92
 replaces : -
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1100R371-2
 Type number : 0 460 426 201
 Customer Part-No. :

Customer-specific information
 Customer : CUM

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
 Setting value mm: 1.30...1.70
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700
 Setting value bar: 4.70...5.30
 Shutoff electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 76.00...77.00
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
 Del. quantity cm³/
 1000S.: 8.00...12.00

Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
 Del. quantity cm³/
 1000S.: 45.00...51.00
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 80.00...120.00
 mind 1000S.: 80.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 3.90...4.70
 mm: (3.60...5.00)

Shutoff electromagnet Volt: 12
 3rd speed 1/min: 700

TD travel mm: 1.30...1.70
 mm: (0.80...2.20)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 TD travel mm: 0.00...0.70
 mm: (0.00...1.00)
 Shutoff
 electromagnet Volt: 12

 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump
 pressure bar: 3.80...4.40
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 700
 Supply-pump
 pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump
 pressure bar: 6.50...7.10
 Shutoff
 electromagnet Volt: 12

 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1190
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 10.00...30.00
 1000s.: (10.00...30.00)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1160
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³: 45.00...51.00
 1000s.: (42.00...54.00)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 65.50...68.50
 1000s.: (64.00...70.00)
 12th speed 1/min: 700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 76.00...77.00
 1000s.: (73.50...79.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 68.00...76.00
 1000s.: (66.00...78.00)

 Mech. shutoff:

 Electr. shutoff:
 1st speed 1/min: 450
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

 Idle delivery:
 1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 8.00...12.00
 1000s.: (5.00...15.00)
 Dispersion cm³: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

 Automatic starting fuel delivery:
 1st speed 1/min: 180
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 80.00...140.00
 1000s.: (80.00...140.00)
 2nd speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...80.00
 1000s.: (40.00...80.00)
 4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³: 80.00...120.00
1000s.: (80.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|---------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 0.8...1.2 |
| SVS max. | mm: 3.3 |

Remarks:

: C.D.C # 392 1960
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : BUK
Edition : 02.06.92
replaces : 04.84
Calibrating oil : ISO 4113

Injection pump : VE3/10F1800L70
Type number : 0 460 403 004

Customer-specific information
Customer : BUKH

Engine : DV-36 TME

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 800
Setting value mm: 2.90...3.30

Supply-pump pressure

Speed 1/min: 1200
Charge press. hPa: 800
Setting value bar: 5.10...5.70

Full-load del. with charge press.:

Speed 1/min: 1700
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 43.50...44.50
Dispersion cm³/: 3.0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 34.50...36.50

Low-idle speed regulation

Speed 1/min: 450
Charge press hPa: -
Del. quantity cm³/
1000S.: 5.50...9.50

Full-load speed regulation

Speed 1/min: 1850
Charge press hPa: 800
Del. quantity cm³/
1000S.: 20.00...26.00

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/:
mind 1000S.: 35.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
Charge press hPa: 800
TD travel mm: 1.10...1.90
mm: (0.80...2.20)
2nd speed 1/min: 1200
Charge press hPa: 800
TD travel mm: 2.90...3.30
mm: (2.40...3.80)
3rd speed 1/min: 1600
Charge press hPa: 800
TD travel mm: 5.00...5.80
mm: (4.70...6.10)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Charge press. hPa: 800

Supply-pump
 pressure bar: 0.80...1.40
 2nd speed 1/min: 1200
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 5.10...5.70
 3rd speed 1/min: 1800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 8.00...8.60

 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Charge press. hPa: -
 Overflow : 27.70...83.30
 quantity cm³/10s: (15.70...98.30)
 2nd speed 1/min: 1800
 Charge press. hPa: -
 Overflow : 55.50...138.80
 quantity cm³/10s: (40.50...153.80)

 Delivery-quant. and breakaway char.:

 1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 265
 LDA-stroke mm: 4.00
 Del. quantity cm³/: 37.50...39.50
 1000S.: (35.50...41.50)
 2nd speed 1/min: 2000
 Charge press. hPa: 800
 Del. quantity cm³/: ...1.00
 1000S.: -
 3rd speed 1/min: 1900
 Charge press. hPa: 800
 Del. quantity cm³/: 2.00...8.00
 1000S.: (1.00...9.00)
 4th speed 1/min: 1850
 Charge press. hPa: 800
 Del. quantity cm³/: 20.00...26.00
 1000S.: (19.00...27.00)
 5th speed 1/min: 1700
 Charge press. hPa: 800
 Del. quantity cm³/: 43.50...44.50
 1000S.: (41.70...46.30)
 6th speed 1/min: 1200
 Charge press. hPa: 800
 Del. quantity cm³/: 44.50...46.50
 1000S.: (43.20...47.80)
 7th speed 1/min: 700
 Charge press. hPa: 800
 Del. quantity cm³/: 40.00...43.00
 1000S.: (39.20...43.80)
 8th speed 1/min: 700
 Charge press. hPa: -
 Del. quantity cm³/: 34.50...36.50
 1000S.: (33.20...37.80)

Mech. shutoff:
 Mech. Abstellung:

 1st speed 1/min: 1800
 Charge press. hPa: -
 1000S.: -

 Idle delivery:

 1st speed 1/min: 450
 Del. quantity cm³/: 5.50...9.50
 1000S.: (3.50...11.50)
 Dispersion cm³/: 3.0
 1000S.: -
 2nd speed 1/min: 480
 Del. quantity cm³/: 1.50...
 1000S.: -
 3rd speed 1/min: 530
 Del. quantity cm³/: 0.00...1.50
 1000S.: -

Automatic starting fuel delivery:

 1st speed 1/min: 450
 Charge press. hPa: -
 Del. quantity cm³/: 38.00...
 1000S.: -

2nd speed 1/min: 580
 Charge press. hPa: -
 Del. quantity cm³/: ...36.00
 1000S.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: 5.9...6.1 |
| MS | mm: 0.7...0.9 |
| SVS max. | mm: 4.2 |
| XK | mm: 20.2...22.2 |
| XL | mm: 12.5...15.8 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 52.2...58.6 |

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 02.06.92
replaces : 07.84
Calibrating oil : ISO4113

Injection pump : VE4/10F1900L106
Type number : 0 460 404 026

Customer-specific information
Customer : VM MOTORI

Engine : HR 492 HT9

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
Charge press. hPa: 750
Setting value mm: 5.10...5.50

Supply-pump pressure

Speed 1/min: 1600
Charge press. hPa: 750
Setting value bar: 5.50...6.10

Full-load del. with charge press.:

Speed 1/min: 1600
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 47.00...48.00
Dispersion cm³/: 3.0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 32.00...35.00

Low-idle speed regulation

Speed 1/min: 350
Charge press hPa: -
Del. quantity cm³/
1000S.: 16.00...20.00
Del. quantity cm³/: 2.5
1000S.: -

Full-load speed regulation

Speed 1/min: 1900
Charge press hPa: 750
Del. quantity cm³/
1000S.: 43.50...46.50

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/: -
mind 1000S.: 65.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
2nd speed 1/min: 1600
Charge press hPa: 750
TD travel mm: 5.10...5.50
mm: (4.60...6.00)
3rd speed 1/min: 1900
Charge press hPa: 750
TD travel mm: 6.70...7.50
mm: (6.40...7.80)

Supply-pump pressure characteristic:

1st speed 1/min: 400

Charge press. hPa: 750
 Supply-pump
 pressure bar: 1.50...2.10
 2nd speed 1/min: 1600
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 5.50...6.10
 3rd speed 1/min: 1900
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 6.80...7.40

 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Overflow : 55.50...111.10
 quantity cm³/10s: (40.50...126.10)
 2nd speed 1/min: 1900
 Overflow : 55.50...111.10
 quantity cm³/10s: (40.50...126.10)

 Delivery-quant. and breakaway char.:

 1nd speed 1/min: 750
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 4.2
 Del. quantity cm³/: 41.50...44.50
 1000s.: (40.00...46.00)
 2nd speed 1/min: 2100
 Charge press. hPa: 750
 Del. quantity cm³/: ...1.00
 1000s.: -
 3rd speed 1/min: 2050
 Charge press. hPa: 750
 Del. quantity cm³/: 2.00...
 1000s.: -
 4th speed 1/min: 2030
 Charge press. hPa: 750
 Del. quantity cm³/: 17.00...23.00
 1000s.: (16.00...24.00)
 5th speed 1/min: 1900
 Charge press. hPa: 750
 Del. quantity cm³/: 43.50...46.50
 1000s.: (41.00...49.00)
 6th speed 1/min: 1600
 Charge press. hPa: -
 Del. quantity cm³/: 31.00...34.00
 1000s.: (29.80...35.20)
 7th speed 1/min: 1600
 Charge press. hPa: 750
 Del. quantity cm³/: 47.00...48.00
 1000s.: (44.80...50.20)
 8th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/: 32.00...35.00
 1000s.: (30.50...36.50)

Mech. shutoff:

Mech. Abstellung:
 1st speed 1/min: 1900

 Idle delivery:
 1st speed 1/min: 350
 Del. quantity cm³/: 16.00...20.00
 1000s.: 14.00...22.00
 Dispersion cm³/: 2.5
 1000s.: -
 2nd speed 1/min: 430
 Del. quantity cm³/: 2.60...
 1000s.: -
 3rd speed 1/min: 500
 Del. quantity cm³/: ...1.00
 1000s.: -

 Automatic starting fuel delivery:
 1st speed 1/min: 350
 Del. quantity cm³/: 48.00...
 1000s.: -

 2nd speed 1/min: 450
 Del. quantity cm³/: ...47.50

 Shutoff electromagnet:
 Cut-in
 Min voltage : 10.0
 Rated voltage : 12.0

 Mounting and assembly dimensions:

 Designation
 K mm: 3.2...3.4
 KF mm: 5.7...6.0
 MS mm: 1.4...1.6
 SVS max. mm: 3.6
 XK mm: 20.2...22.2
 XL mm: 14.2...17.6
 Ya mm: 37.2...39.2
 Yb mm: 55.7...63.5

Remarks:
 Operate control lever after each
 manifold-pressure compensator pressure
 change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
 Edition : 15.06.92
 replaces : 19.07.89
 Calibrating oil : ISO-4113

 Injection pump : VE4/10F2100L297-1
 Type number : 0 460 404 056
 Customer Part-No. :

Customer-specific information

Customer : OPEL

 Engine : 2,3YDT OM.;SEN.M-EGR

 Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 2.70...3.10

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value bar: 4.20...4.80
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 62.50...63.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 3.0
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 40.50...41.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 290
 Del. quantity cm³/
 1000S.: 13.50...17.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 15.00...21.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³: 50.00...66.00
mind 1000s.: 50.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000s.: 22.00...24.00*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: 1.20...1.40*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.00...8.80
mm: (7.70...9.10)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5.20...5.80
mm: (4.80...6.20)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 1.50...3.50
mm: (1.30...3.70)

Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3.50...5.90
mm: (2.90...6.50)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.70...4.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

| | | |
|--------------------------------------|--|---|
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Overflow | : 41.70...83.40 | |
| quantity | cm ³ /10s: (41.70...83.40) | |
| 2nd speed | 1/min: 2150 | |
| Charge press. | hPa: 1000 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Overflow | : 55.60...139.00 | |
| quantity | cm ³ /10s: (55.60...139.00) | |
| Delivery-quant. and breakaway char.: | | |
| 1nd speed | 1/min: 800 | |
| Charge-air pressure-setting | | |
| point | hPa: 500 | |
| LDA-stroke | mm: 6.5 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Del. quantity cm ³ : | 55.50...56.50 | |
| | 1000S.: (53.00...59.00) | |
| 2nd speed | 1/min: 2700 | |
| Charge press. | hPa: 1000 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Del. quantity cm ³ : | 0.00...3.00 | |
| | 1000S.: (0.00...3.00) | |
| 5th speed | 1/min: 2500 | |
| Charge press. | hPa: 1000 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Del. quantity cm ³ : | 15.00...21.00 | |
| | 1000S.: (14.00...22.00) | |
| 9th speed | 1/min: 2100 | |
| Charge press. | hPa: 1000 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Del. quantity cm ³ : | 51.30...53.70 | |
| | 1000S.: (50.20...54.80) | |
| 12th speed | 1/min: 1200 | |
| Charge press. | hPa: 1000 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet | Volt: 12 | |
| Del. quantity cm ³ : | 62.50...63.50 | |
| | 1000S.: (60.00...66.00) | |
| | | 16th speed 1/min: 800 |
| | | KSB solenoid-operated |
| | | valve volt: 12 |
| | | Shutoff |
| | | electromagnet volt: 12 |
| | | Del. quantity cm ³ : 40.50...43.50 |
| | | 1000H.: - |
| | | 18th speed 1/min: 500 |
| | | KSB/AFB |
| | | valve Volt: 12 |
| | | Shutoff |
| | | electromagnet Volt: 12 |
| | | Del. quantity cm ³ : 40.50...41.50 |
| | | 1000S.: (38.70...43.30) |
| | | 20th speed 1/min: 800 |
| | | Charge press. hPa: 1000 |
| | | KSB/AFB |
| | | valve Volt: 12 |
| | | Shutoff |
| | | electromagnet Volt: 12 |
| | | Del. quantity cm ³ : 60.50...63.50 |
| | | 1000S.: - |
| | | Mech. shutoff: |
| | | Electr. shutoff: |
| | | 1st speed 1/min: 290 |
| | | Del. quantity cm ³ : 0.00...3.00 |
| | | 1000S.: (0.00...3.00) |
| | | Idle delivery: |
| | | 1st speed 1/min: 290 |
| | | KSB/AFB |
| | | valve Volt: 12 |
| | | Shutoff |
| | | electromagnet Volt: 12 |
| | | Del. quantity cm ³ : 13.50...17.50 |
| | | 1000S.: (11.50...19.50) |
| | | Dispersion cm ³ : 3.0 |
| | | 1000S.: (3.0) |
| | | 2nd speed 1/min: 380 |
| | | KSB/AFB |
| | | valve Volt: 12 |
| | | Shutoff |
| | | electromagnet Volt: 12 |
| | | Del. quantity cm ³ : 0.00...3.00 |
| | | 1000S.: (0.00...3.00) |
| | | 3rd speed 1/min: 320 |
| | | KSB/AFB |
| | | valve Volt: 12 |
| | | Shutoff |
| | | electromagnet Volt: 12 |
| | | Del. quantity cm ³ : 7.00...13.00 |
| | | 1000S.: (6.50...13.50) |
| | | Load-dependent start of delivery: |
| | | Inj.-qty.dif.measurement: |

3rd speed 1/min: 1000
Inj.-qty. cm³/: 22.00...24.00*
difference 1000S.: (20.00...26.00)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1000
Inj.-qty. cm³/: 3.50...6.50#
difference 1000S.: (3.50...6.50)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 1.20...1.40*
difference mm: (1.20...1.40)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

4th speed 1/min: 1000
TD-travel : 0.50...1.10#
difference mm: (0.50...1.10)

KSB/AFB
valve Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...60.00
1000S.: (50.00...60.00)

2nd speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...50.00
1000S.: (40.00...50.00)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...66.00
1000S.: (50.00...66.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 0.8...1.2 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 38.2...43.8 |

Remarks:

Overflow restriction 0.55 mm - Part No.
.303 :

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.06.92
Calibrating oil : ISO-4113

Injection pump : VE6/10F2150L152
Type number : 0 460 406 040

Customer-specific information
Customer : VW

Engine : 087T-LT 2.4L (SG)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750

Del. quantity cm³/
1000s.: 41.50...42.50
Dispersion cm³/: 2.5
1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000s.: 23.50...24.50

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000s.: 6.00...10.00
Del. quantity cm³/: 2.0
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 750
Del. quantity cm³/
1000s.: 10.00...14.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000s.: 35.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 0.50...1.30
mm: (0.20...1.60)
2nd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 2.30...2.70
mm: (1.80...3.20)
3rd speed 1/min: 2150
Charge press hPa: 750
TD travel mm: 4.40...5.20
mm: (4.10...5.50)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump
pressure bar: 3.70...4.30
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump
pressure bar: 6.10...6.70

3rd speed 1/min: 2150
Charge press. hPa: 750
Supply-pump pressure bar: 7.80...8.40

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2150
Charge press. hPa: 750
Overflow : 55.50...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 4.5
Del. quantity cm³/: 32.50...33.50
1000s.: (30.00...36.00)
2nd speed 1/min: 2600
Charge press. hPa: 750
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/: 10.00...14.00
1000s.: (8.00...16.00)
4th speed 1/min: 2300
Charge press. hPa: 750
Del. quantity cm³/: 20.50...30.50
1000s.: (19.50...31.50)
5th speed 1/min: 2150
Charge press. hPa: 750
Del. quantity cm³/: 35.50...37.50
1000s.: (34.30...38.70)
6th speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/: 41.50...42.50
1000s.: (39.80...44.20)
7th speed 1/min: 600
Charge press. hPa: 750
Del. quantity cm³/: 37.00...40.00
1000s.: (35.50...41.50)
8th speed 1/min: 600
Del. quantity cm³/: 23.50...24.50
1000s.: (21.00...27.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 6.00...10.00
1000s.: (4.00...12.00)
Dispersion cm³/: 2.0
1000s.: (3.0)

2nd speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm³/: 25.00...75.00
1000s.: (25.00...75.00)

2nd speed 1/min: 500
Del. quantity cm³/: 7.00...27.00
1000s.: (7.00...27.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 6.3...6.6 |
| MS | mm: 1.0...1.2 |
| SVS max. | mm: 3.8 |
| FH | mm: 1.8...2.4 |
| Ya | mm: 31.5...33.5 |
| Yb | mm: 51.0...63.3 |

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : WW
 Edition : 05.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE6/10F2400L116-8
 Type number : 0 460 405 077
 Customer Part-No. :

Customer-specific information
 Customer : WW

Engine : 072.4 (2.4l.) Vol

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 750
 Setting value mm: 1.50...1.90
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 750
 Setting value bar: 5.70...6.30

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 750
 Del. quantity cm³/
 1000S.: 42.60...43.60

Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 26.70...27.70

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
 Del. quantity cm³/
 1000S.: 7.00...9.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2675
 Charge press hPa: 750
 Del. quantity cm³/
 1000S.: 11.00...15.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 40.00...70.00
 mind 1000S.: 40.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
 Charge press hPa: 750
 TD travel mm: 3.70...4.50
 mm: (3.40...4.80)
 Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 750
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump
pressure bar: 3.30...3.90
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump
pressure bar: 5.70...6.30
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2400
Charge press. hPa: 750
Supply-pump
pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...138.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 4.8
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.50...34.50
1000S.: (31.00...37.00)
2nd speed 1/min: 2850

Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2675
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (9.00...17.00)
8th speed 1/min: 2575
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...28.00
1000S.: (17.00...29.00)
9th speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.30...38.30
1000S.: (35.10...39.50)
12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.60...43.60
1000S.: (40.90...45.30)
18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.70...27.70
1000S.: (24.20...30.20)
20th speed 1/min: 600
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...38.50
1000S.: (34.00...40.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 415
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)
Dispersion cm³/: 2.0
1000S.: (3.0)
2nd speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|---------------|
| K | mm: 3.2...3.4 |
| KF | mm: 6.3...6.6 |
| MS | mm: 1.6...2.0 |
| LDA stroke | mm: 4.0 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 04.06.92
 replaces : 18.02.91
 Calibrating oil : ISO-4113

Injection pump : VE3/11F1250L163-1
 Type number : 0 460 413 002

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8035.06.200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172...175

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 2.80...3.20
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 5.70...6.30

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
 Del. quantity cm³/
 1000S.: 62.50...63.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/ : 3.5
 100CS.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 15.50...19.50
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
 Del. quantity cm³/
 1000S.: 37.00...43.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 80.00...130.00
 mind 1000S.: 80.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 1st speed | 1/min: 1250 |
| TD travel | mm: 4.40...5.20 |
| | mm: (4.10...5.50) |
| 2nd speed | 1/min: 1000 |
| TD travel | mm: 2.80...3.20 |
| | mm: (2.30...3.70) |
| 3rd speed | 1/min: 800 |
| TD travel | mm: 1.10...1.90 |
| | mm: (0.80...2.20) |

Supply-pump pressure characteristic:

| | |
|-------------------------|------------------|
| 1st speed | 1/min: 500 |
| Supply-pump pressure | bar: 3.40...4.00 |
| 2nd speed | 1/min: 1000 |

Supply-pump pressure bar: 5.70...6.30
 3rd speed 1/min: 1250
 Supply-pump pressure bar: 6.80...7.40
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Overflow : 55.50...139.00
 quantity cm³/10s: (55.50...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1450
 Del. quantity cm³: 0.00...1.00
 1000s.: (0.00...1.00)
 3rd speed 1/min: 1400
 Del. quantity cm³: 4.00...16.00
 1000s.: (0.00...20.00)
 4th speed 1/min: 1350
 Del. quantity cm³: 37.00...43.00
 1000s.: (34.00...46.00)
 5th speed 1/min: 1250
 Del. quantity cm³: 61.50...64.50
 1000s.: (60.00...66.00)
 6th speed 1/min: 800
 Del. quantity cm³: 62.50...63.50
 1000s.: (60.00...66.00)
 7th speed 1/min: 500
 Del. quantity cm³: 53.50...56.50
 1000s.: (52.00...58.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1250
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Del. quantity cm³: 15.50...19.50
 1000s.: (13.50...21.50)
 Dispersion cm³: 3.5
 1000s.: (3.5)
 2nd speed 1/min: 425
 Del. quantity cm³: 6.00...12.00
 1000s.: (5.00...14.00)

3rd speed 1/min: 475
 Del. quantity cm³: 0.00...1.00
 1000s.: (0.00...1.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Del. quantity cm³: 90.00...140.00
 1000s.: (90.00...140.00)
 2nd speed 1/min: 250
 Del. quantity cm³: 30.00...50.00
 1000s.: (30.00...50.00)
 4th speed 1/min: 100
 Del. quantity cm³: 80.00...130.00
 1000s.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 1.4...1.8 |
| SVS max. | mm: 4.7 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 44.0...49.0 |

Overflow restriction 0.55 mm - Part No.
 ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 05.06.92
 replaces : 09.85
 Calibrating oil : ISO-4113

Injection pump : VE3/11F1250L163-2
 Type number : 0 460 413 004

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8035.06.220

Power KW: 33

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172...175

Test inj. tubing : 1 630 750 C17

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
 Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 800
 Setting value bar: 4.70...5.30

Full-load del. with charge press.:

Speed 1/min: 800
 Del. quantity cm³/
 1000S.: 59.00...60.00

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 10.50...14.50
 Del. quantity cm³/: 3.5
 1000S.: 3.5

Full-load speed regulation

Speed 1/min: 1400
 Del. quantity cm³/
 1000S.: 12.00...18.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 80.00...130.00
 mind 1000S.: 80.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 1st speed | 1/min: 600 |
| TD travel | mm: 0.80...1.60 |
| | mm: (0.50...1.90) |
| 2nd speed | 1/min: 800 |
| TD travel | mm: 2.80...3.20 |
| | mm: (2.30...3.70) |
| 3rd speed | 1/min: 1000 |
| TD travel | mm: 4.50...5.30 |
| | mm: (4.20...5.60) |

Supply-pump pressure characteristic:

| | |
|-------------|---------------------------|
| 1st speed | 1/min: 500 |
| Supply-pump | pressure bar: 3.20...3.80 |
| 2nd speed | 1/min: 800 |
| Supply-pump | pressure bar: 4.70...5.30 |
| 3rd speed | 1/min: 1250 |
| Supply-pump | pressure bar: 6.70...7.30 |

Overflow quantity at overflow valve:

| | |
|-----------|---------------------------------------|
| 1st speed | 1/min: 500 |
| Overflow | : 41.70...83.40 |
| quantity | cm ³ /10s: (41.70...83.40) |
| 2nd speed | 1/min: 1250 |

Overflow quantity cm³/10s: 55.50...139.00
(55.50...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1400
Del. quantity cm³/: 12.00...18.00
1000s.: (12.00...18.00)
4th speed 1/min: 1350
Del. quantity cm³/: 37.00...53.00
1000s.: (35.00...55.00)
5th speed 1/min: 1250
Del. quantity cm³/: 51.50...54.50
1000s.: (49.50...56.50)
6th speed 1/min: 800
Del. quantity cm³/: 59.00...60.00
1000s.: (56.00...63.00)
7th speed 1/min: 500
Del. quantity cm³/: 54.00...57.00
1000s.: (52.00...59.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 10.50...14.50
1000s.: 8.50...16.50
Dispersion cm³/: 3.5
1000s.: (3.5)
2nd speed 1/min: 425
Del. quantity cm³/: 2.00...8.00
1000s.: (1.00...9.00)
3rd speed 1/min: 500
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Del. quantity cm³/: 20.00...50.00
1000s.: (20.00...50.00)

2nd speed 1/min: 150

Del. quantity cm³/: 80.00...130.00
1000s.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: 5.1...5.4 |
| MS | mm: 1.5...1.7 |
| SVS max. | mm: 4.3 |
| XK | mm: 17.0...19.0 |
| XL | mm: 14.5...17.9 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 46.0...51.0 |

Overflow restriction 0.55 mm - Part No.
.303

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 05.06.92
replaces : 07.85
Calibrating oil : ISO-4113

Injection pump : VE3/11F1200L163-3
Type number : 0 460 413 005
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8035.05.265

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Test inj. tubing : Lochdusee 0,6 mm

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 3.20...3.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000s.: 62.50...63.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000s.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000s.: 15.00...21.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 90.00...140.00
mind 1000s.: 80.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 6.10...6.90
mm: (5.80...7.20)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
TD travel mm: 3.20...3.60
mm: (2.70...4.10)
Shutoff
electromagnet Volt: 12

4th speed 1/min: 500
TD travel mm: 0.70...1.50
mm: (0.40...1.80)
Shutoff
electromagnet Volt: 12

6th speed 1/min: 1100
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

| | |
|---|--|
| Shutoff | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| Supply-pump pressure characteristic: | |
| 1st speed 1/min: 500 | |
| Supply-pump | |
| pressure bar: 2.90...3.50 | |
| Shutoff | |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| 3rd speed 1/min: 800 | Del. quantity cm ³ /: 62.50...63.50 |
| Supply-pump | 1000s.: (60.00...66.00) |
| pressure bar: 4.20...4.80 | 20th speed 1/min: 500 |
| Shutoff | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| 4th speed 1/min: 1200 | Del. quantity cm ³ /: 59.50...62.50 |
| Supply-pump | 1000s.: (57.50...64.50) |
| pressure bar: 6.00...6.60 | |
| Shutoff | |
| electromagnet Volt: 12 | |
| Overflow quantity at overflow valve: | Mech. shutoff: |
| 1st speed 1/min: 500 | Mech. Abstellung: |
| Shutoff | |
| electromagnet Volt: 12 | |
| Overflow : 41.70...83.40 | 1st speed 1/min: 1200 |
| quantity cm ³ /10s: (41.70...83.40) | Del. quantity cm ³ /: 0.00...3.00 |
| 2nd speed 1/min: 1250 | 1000s.: (0.00...3.00) |
| Shutoff | Shutoff |
| electromagnet Volt: 12 | electromagnet volt: 12 |
| Overflow : 55.60...139.00 | |
| quantity cm ³ /10s: (55.60...139.00) | |
| Delivery-quant. and breakaway char.: | Electr. shutoff: |
| 2nd speed 1/min: 1400 | |
| Shutoff | 1st speed 1/min: 350 |
| electromagnet Volt: 12 | Shutoff |
| Del. quantity cm ³ /: 0.00...3.00 | electromagnet Volt: 12 |
| 1000s.: (0.00...3.00) | Del. quantity cm ³ /: 13.00...17.00 |
| 5th speed 1/min: 1350 | 1000s.: (11.00...19.00) |
| Shutoff | Dispersion cm ³ /: 3.5 |
| electromagnet Volt: 12 | 1000s.: (3.5) |
| Del. quantity cm ³ /: 15.00...21.00 | 2nd speed 1/min: 420 |
| 1000s.: (12.00...24.00) | Shutoff |
| 8th speed 1/min: 1300 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm ³ /: 0.00...3.00 |
| electromagnet Volt: 12 | 1000s.: (0.00...3.00) |
| Del. quantity cm ³ /: 33.00...49.00 | 3rd speed 1/min: 380 |
| 1000s.: (31.00...51.00) | Shutoff |
| 9th speed 1/min: 1250 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm ³ /: 3.00...9.00 |
| electromagnet Volt: 12 | 1000s.: (2.00...10.00) |
| Del. quantity cm ³ /: 56.00...59.00 | |
| 1000s.: (54.00...61.00) | |
| Shutoff | Automatic starting fuel delivery: |
| electromagnet Volt: 12 | |
| 12th speed 1/min: 800 | 1st speed 1/min: 150 |
| | Shutoff |
| | electromagnet Volt: 12 |
| | Del. quantity cm ³ /: 100.00...150.00 |
| | 1000s.: (90.00...140.00) |
| | 2nd speed 1/min: 250 |
| | Shutoff |
| | electromagnet Volt: 12 |
| | Del. quantity cm ³ /: 25.00...65.00 |
| | 1000s.: (25.00...65.00) |
| | 4th speed 1/min: 100 |

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 90.00...140.00
1000s.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: 5.2...5.5 |
| MS | mm: 1.5...1.7 |
| SVS max. | mm: 4.0 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 44.5...49.5 |

Remarks:

:

Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE
 Edition : 12.06.92
 replaces : 18.02.91
 Calibrating oil : ISO-4113
 Injection pump : VE3/11F1200R263-1
 Type number : 0 460 413 007

Customer-specific information
 Customer : STEYR

Engine : WD311-85

Power KW: 41

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 5.80...6.20

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 6.20...6.80

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 78.00...79.00
 Dispersion cm³: 3.5
 1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 11.00...15.00
 Del. quantity cm³: 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1300
 Del. quantity cm³/
 1000S.: 17.00...23.00

Start:

Speed 1/min: 100
 Del. quantity cm³: 84.00...134.00
 mind 1000S.: 84.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 1st speed | 1/min: 1200 |
| TD travel | mm: 6.90...7.70 |
| | mm: (6.60...8.00) |
| 2nd speed | 1/min: 1000 |
| TD travel | mm: 5.80...6.20 |
| | mm: (5.30...6.70) |
| 3rd speed | 1/min: 500 |
| TD travel | mm: 1.60...2.40 |
| | mm: (1.30...2.70) |

Supply-pump pressure characteristic:

| | |
|-------------|---------------------------|
| 1st speed | 1/min: 1200 |
| Supply-pump | pressure bar: 7.00...7.60 |
| 2nd speed | 1/min: 1000 |
| Supply-pump | pressure bar: 6.20...6.80 |
| 3rd speed | 1/min: 500 |
| Supply-pump | pressure bar: 4.30...4.90 |

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1200
Overflow : 55.50...139.00
quantity cm³/10s: (55.50...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1300
Del. quantity cm³/: 17.00...23.00
1000s.: (15.00...25.00)
4th speed 1/min: 1250
Del. quantity cm³/: 41.00...57.00
1000s.: (39.00...59.00)
5th speed 1/min: 1200
Del. quantity cm³/: 74.50...77.50
1000s.: (73.70...78.30)
6th speed 1/min: 1000
Del. quantity cm³/: 78.00...79.00
1000s.: (76.20...80.80)
7th speed 1/min: 500
Del. quantity cm³/: 72.50...75.50
1000s.: (71.50...76.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1200
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 11.00...15.00
1000s.: (9.00...17.00)
Dispersion cm³/: 3.5
1000s.: (3.5)
2nd speed 1/min: 330
Del. quantity cm³/: 3.00...9.00
1000s.: (2.00...10.00)
3rd speed 1/min: 400
Del. quantity cm³/: 0.00...2.60
1000s.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm³/: 84.00...134.00
1000s.: (84.00...134.00)

2nd speed 1/min: 270
Del. quantity cm³/: 37.00...73.00
1000s.: (37.00...73.00)

4th speed 1/min: 100
Del. quantity cm³/: 84.00...134.00
1000s.: (84.00...134.00)

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.2...1.6 |
| SVS max. | mm: 5.0 |
| XK | mm: 17.0...19.0 |
| XL | mm: 12.6...16.0 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 50.1...58.3 |

Remarks:

Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE
 Edition : 12.06.92
 replaces : 15.07.88
 Calibrating oil : ISO-4113
 Injection pump : VE3/11F1200R263-2
 Type number : 0 460 413 008
 Customer Part-No. :

Customer-specific information
 Customer : STEYR

Engine : WD308-47/48

Power KW: 31

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...43
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 5.40...5.80

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 5.60...6.20

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 57.50...58.50
 Dispersion cm³/ : 3.5
 1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 14.00...18.00
 Del. quantity cm³/ : 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1300
 Del. quantity cm³/
 1000S.: 8.00...14.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 70.00...100.00
 mind 1000S.: 70.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 2nd speed | 1/min: 1200 |
| TD travel | mm: 6.70...7.50 |
| | mm: (6.40...7.80) |
| 3rd speed | 1/min: 1000 |
| TD travel | mm: 5.40...5.80 |
| | mm: (4.90...6.30) |
| 4th speed | 1/min: 500 |
| TD travel | mm: 0.70...1.50 |
| | mm: (0.40...1.80) |

Supply-pump pressure characteristic:

| | |
|----------------------|------------------|
| 1st speed | 1/min: 1200 |
| Supply-pump pressure | bar: 6.50...7.10 |
| 2nd speed | 1/min: 1000 |
| Supply-pump pressure | bar: 5.60...6.20 |
| 3rd speed | 1/min: 500 |
| Supply-pump pressure | bar: 3.60...4.20 |

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1200
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1330
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1300
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
8th speed 1/min: 1250
Del. quantity cm³/: 29.00...45.00
1000S.: (27.00...47.00)
9th speed 1/min: 1200
Del. quantity cm³/: 53.00...56.00
1000S.: (52.20...56.80)
10th speed 1/min: 800
Del. quantity cm³/: 56.00...59.00
1000S.: -
12th speed 1/min: 1000
Del. quantity cm³/: 57.50...58.50
1000S.: (55.70...60.30)
20th speed 1/min: 500
Del. quantity cm³/: 49.50...52.50
1000S.: (48.50...53.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1200
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 14.00...18.00
1000S.: (12.00...20.00)
Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 330
Del. quantity cm³/: 5.00...11.00
1000S.: (4.00...12.00)
3rd speed 1/min: 400
Del. quantity cm³/: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 970
Del. quantity cm³/: 75.00...105.00
1000S.: (75.00...105.00)

2nd speed 1/min: 250
Del. quantity cm³/: 36.00...46.00
1000S.: (36.00...46.00)

4th speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.2...1.6 |
| SVS max. | mm: 4.1 |
| XK | mm: 17.0...19.0 |
| XL | mm: 11.7...15.1 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 48.0...56.4 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 05.06.92
 replaces : 18.02.91
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164
 Type number : 0 460 414 013

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8045.05.200

Power KW: 58

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172...175

Perforated-plate
 diameter mm: 6.0

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
 Setting value mm: 3.80...4.20
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
 Setting value bar: 5.10...5.70
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
 Del. quantity cm³/
 1000S.: 73.50...74.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/ : 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 21.00...25.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
 Del. quantity cm³/
 1000S.: 29.00...35.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 90.00...140.00
 mind 1000S.: 90.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
 TD travel mm: 1.20...2.00
 mm: (0.90...2.30)

Shutoff : -
 electromagnet Volt: 12
 2nd speed 1/min: 800
 TD travel mm: 3.80...4.20
 mm: (3.30...4.70)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250

| | | | |
|---|--------------------------------------|---|--|
| TD travel | mm: 7.60...8.40 mm: (7.30...8.70) | Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 73.50...74.50 1000s.: (71.00...77.00) |
| Shutoff electromagnet Volt: 12 | | 7th speed 1/min: 500 | 7th speed 1/min: 500 |
| Supply-pump pressure characteristic: | | Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 64.00...67.00 1000s.: (62.50...68.50) |
| 1st speed 1/min: 500 | | Mech. shutoff: Mech. Abstellung: | |
| Supply-pump pressure bar: 3.60...4.20 | | 1st speed 1/min: 1250 | |
| Shutoff electromagnet Volt: 12 | | Del. quantity cm ³ /: 0.00...3.00 | |
| 2nd speed 1/min: 800 | | 1000s.: (0.00...3.00) | |
| Supply-pump pressure bar: 5.10...5.70 | | Shutoff electromagnet volt: 12 | |
| Shutoff electromagnet Volt: 12 | | Electr. shutoff: | |
| 3rd speed 1/min: 1250 | | 1st speed 1/min: 350 | |
| Supply-pump pressure bar: 7.00...7.60 | | Del. quantity cm ³ /: 0.00...3.00 | |
| Shutoff electromagnet Volt: 12 | | 1000s.: (0.00...3.00) | |
| Overflow quantity at overflow valve: | | Idle delivery: | |
| 1st speed 1/min: 500 | | 1st speed 1/min: 350 | |
| Shutoff electromagnet Volt: 12 | | Shutoff electromagnet Volt: 12 | |
| Overflow : 55.50...139.00 | | Del. quantity cm ³ /: 21.00...25.00 | |
| quantity cm ³ /10s: (55.50...139.00) | | 1000s.: (19.00...27.00) | |
| 2nd speed 1/min: 1250 | | Dispersion cm ³ /: 3.5 | |
| Shutoff electromagnet Volt: 12 | | 1000s.: (3.5) | |
| Overflow : 55.50...139.00 | | 2nd speed 1/min: 425 | |
| quantity cm ³ /10s: (55.50...139.00) | | Shutoff electromagnet Volt: 12 | |
| Delivery-quan. and breakaway char.: | | Del. quantity cm ³ /: 1.00...7.00 | |
| 2nd speed 1/min: 1430 | | 1000s.: (0.00...8.00) | |
| Shutoff electromagnet Volt: 12 | | 3rd speed 1/min: 500 | |
| Del. quantity cm ³ /: 0.00...3.00 | | Shutoff electromagnet Volt: 12 | |
| 1000s.: (0.00...3.00) | | Del. quantity cm ³ /: 0.00...1.00 | |
| 3rd speed 1/min: 1380 | | 1000s.: (0.00...1.00) | |
| Shutoff electromagnet Volt: 12 | | Automatic starting fuel delivery: | |
| Del. quantity cm ³ /: 4.00...20.00 | | 1st speed 1/min: 150 | |
| 1000s.: (4.00...12.00) | | Shutoff electromagnet Volt: 12 | |
| 4th speed 1/min: 1350 | | Del. quantity cm ³ /: 90.00...140.00 | |
| Shutoff electromagnet Volt: 12 | | 1000s.: (90.00...140.00) | |
| Del. quantity cm ³ /: 29.00...35.00 | | 2nd speed 1/min: 250 | |
| 1000s.: (26.00...38.00) | | Shutoff electromagnet Volt: 12 | |
| 5th speed 1/min: 1250 | | Del. quantity cm ³ /: 47.00...67.00 | |
| Shutoff electromagnet Volt: 12 | | 1000s.: (47.00...67.00) | |
| Del. quantity cm ³ /: 68.50...71.50 | | 4th speed 1/min: 100 | |
| 1000s.: (67.00...73.00) | | | |
| 6th speed 1/min: 800 | | | |

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000S.: (90.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.3...5.7 |
| MS | mm: 1.4...1.8 |
| SVS max. | mm: 4.6 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 44.1...49.1 |

Remarks:
Overflow restriction 0.55 mm - Part No.
.303

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 05.06.92
 replaces : 03.84
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164-1
 Type number : 0 450 414 015
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8045.06.200

Power KW: 53

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Test inj. tubing : Lochduese 0,6 mm

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
 Setting value mm: 1.90...2.30
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
 Setting value bar: 3.70...4.30
 Shutoff electromagnet Volt: 12
 Full-load del. with charge press.:
 Speed 1/min: 800
 Del. quantity cm³/
 1000S.: 67.00...68.00
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 23.00...27.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1365
 Del. quantity cm³/
 1000S.: 29.00...35.00
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 90.00...140.00
 mind 1000S.: 90.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 4.80...5.60
 mm: (4.50...5.90)
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 800
 TD travel mm: 1.90...2.30
 mm: (1.40...2.80)
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 600

| | | |
|---|--|--|
| TD travel | mm: 0.20...0.80 mm: (-0.10...1.10) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 59.50...62.50 1000s.: (58.00...64.00) |
| Shutoff electromagnet Volt: 12 | 5th speed 1/min: 1250 | 12th speed 1/min: 800 |
| TD travel | mm: 5.30...6.10 mm: (5.00...6.40) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 67.00...68.00 1000s.: (64.50...70.50) |
| Shutoff electromagnet Volt: 12 | Supply-pump pressure characteristic: | 20th speed 1/min: 500 |
| 1st speed 1/min: 600 | | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 60.50...63.50 1000s.: (59.00...65.00) |
| Supply-pump pressure bar: 2.90...3.50 | | Mech. shutoff: Mech. Abstellung: |
| Shutoff electromagnet Volt: 12 | 3rd speed 1/min: 800 | 1st speed 1/min: 1250 Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Supply-pump pressure bar: 3.70...4.30 | Supply-pump pressure bar: 6.00...6.60 | Shutoff electromagnet volt: 12 |
| Shutoff electromagnet Volt: 12 | 4th speed 1/min: 1250 | Electr. shutoff: |
| Supply-pump pressure bar: 6.00...6.60 | | 1st speed 1/min: 350 Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Shutoff electromagnet Volt: 12 | Overflow quantity at overflow valve: | Idle delivery: |
| 1st speed 1/min: 500 | | 1st speed 1/min: 350 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 23.00...27.00 1000s.: (21.00...29.00) |
| Shutoff electromagnet Volt: 12 | Overflow : 41.70...83.40 quantity cm ³ /10s: (41.70...83.40) | Dispersion cm ³ /: 3.5 1000s.: (3.5) |
| 2nd speed 1/min: 1250 | 2nd speed 1/min: 1250 | 2nd speed 1/min: 480 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Shutoff electromagnet Volt: 12 | Overflow : 55.60...139.00 quantity cm ³ /10s: (55.60...139.00) | 3rd speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 2.00...8.00 1000s.: (1.00...9.00) |
| Delivery-quant. and breakaway char.: | | Automatic starting fuel delivery: |
| 2nd speed 1/min: 1430 | | 1st speed 1/min: 150 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 90.00...140.00 1000s.: (90.00...140.00) |
| Shutoff electromagnet Volt: 12 | 3rd speed 1/min: 1395 | 2nd speed 1/min: 250 |
| Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 7.00...17.00 1000s.: (4.00...20.00) | |
| 3rd speed 1/min: 1395 | 5th speed 1/min: 1365 | |
| Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 29.00...35.00 1000s.: (26.00...38.00) | |
| Del. quantity cm ³ /: 29.00...35.00 1000s.: (26.00...38.00) | 9th speed 1/min: 1250 | |

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...60.00
1000s.: (40.00...60.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000s.: (90.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.2...5.4
MS mm: 1.5...1.7
SVS max. mm: 4.3
Ya mm: 37.9...39.9
Yb mm: 43.6...48.6

Remarks:
Overflow restriction 0.55 mm - Part No.
.303 :

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 10.06.92
 replaces : 09.05.89
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R228
 Type number : 0 460 414 029

Customer-specific information
 Customer : PERKINS

Engine : PRIMA 4.20

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery block
 Piston stroke mm: 1.37
 mm: +0.02(0.06)
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
 Setting value mm: 3.20...3.60
 AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1800
 Setting value bar: 6.20...6.80
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 19.00...20.00 F

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Dispersion cm³/: 4.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 42.80...43.80 E

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Dispersion cm³/: 4.0
 1000S.: -

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 8.00...10.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 3.0
 1000S.: -

Full-load speed regulation

Speed 1/min: 2500
 Del. quantity cm³/
 1000S.: 23.50...25.50

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...100.00
 mind 1000S.: 55.00

KSB/AFB
 Valve Volt: 12

| | | |
|--------------------------------------|---------------------|---|
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Inspection-pump test specifications | | |
| Test specifications in parentheses | | |
| Timing-device characteristic: | | |
| 1st speed | 1/min: 500 | |
| TD travel | mm: 2.30...2.50 A | |
| | mm: (1.60...3.20) A | |
| electromagnet Volt: | 12 | |
| 2nd speed | 1/min: 1200 | |
| TD travel | mm: 2.10...4.10 B | |
| | mm: (1.90...4.30) B | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 3rd speed | 1/min: 1500 | |
| TD travel | mm: 1.60...2.40 | |
| | mm: (1.30...2.70) | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 4th speed | 1/min: 1800 | |
| TD travel | mm: 3.20...3.60 | |
| | mm: (2.80...4.00) | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 5th speed | 1/min: 2250 | |
| TD travel | mm: 4.60...5.40 | |
| | mm: (4.30...5.70) | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Supply-pump pressure characteristic: | | |
| 1st speed | 1/min: 1000 | |
| Supply-pump | pressure | bar: 4.30...4.90 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 2nd speed | 1/min: 1800 | |
| Supply-pump | pressure | bar: 6.20...6.80 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| 3rd speed | 1/min: 2250 | |
| Supply-pump | pressure | bar: 7.40...8.00 |
| Overflow quantity at overflow valve: | | |
| 1st speed | 1/min: 500 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Overflow | quantity | : 41.70...83.40 cm ³ /10s: (41.70...83.40) |
| 2nd speed | 1/min: 2250 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Overflow | quantity | : 55.60...139.00 cm ³ /10s: (55.60...139.00) |
| Delivery-quant. and breakaway char.: | | |
| 1nd speed | 1/min: 2250 | |
| HBA-stroke | | mm: 10.4 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Del. quantity | cm ³ : | 57.50...62.50 D 1000S.: (56.50...63.50) D |
| 2nd speed | 1/min.: | 2600 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Del. quantity | cm ³ : | 0.00...15.00 1000S.: (0.00...15.00) |
| 3rd speed | 1/min: | 2500 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Del. quantity | cm ³ : | 23.50...25.50 1000S.: (20.50...28.50) |
| 4th speed | 1/min: | 1000 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Del. quantity | cm ³ : | 42.80...43.80 E 1000S.: (39.80...46.80) E |
| 5th speed | 1/min: | 500 |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: | 12 | |
| Del. quantity | cm ³ : | 19.00...20.00 F 1000S.: (17.00...22.00) F |
| Mech. shutoff: | | |
| Electr. shutoff: | | |

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
KSB/AFB
valve Volt: 12

Idle delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...10.00
1000s.: (5.00...13.00)
Dispersion cm³/: 3.0
1000s.: -
2nd speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000s.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000s.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: K-OT |
| MS | mm: 1.1...1.5 |
| SVS max. | mm: 6.0 |
| XK | mm: 20.0...22.0 |
| XL | mm: 10.4...13.8 |
| Ya | mm: 37.0...39.0 |
| Yb | mm: 51.1...62.4 |

Remarks:

A = KSB adjustment point
B = KSB curve point

F = Adjustment point for low full-load

delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
 Edition : 11.06.92
 replaces : 03.12.86
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1300L251
 Type number : 0 460 414 037
 Customer Part-No. :

Customer-specific information
 Customer : VOLVO-PENTA

Engine : TD 31

Power KW: 49

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C

with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.40...1.80

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 4.80...5.40

Full-load del. with charge press.:

Speed 1/min: 1100
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 66.50...67.50
 Dispersion cm³/: 3.0
 1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 45.00...46.00

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 18.00...22.00
 Del. quantity cm³/: 3.0
 1000S.: (3.5)

Full-load speed regulation:

Speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 20.00...26.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...110.00
 mind 1000S.: 70.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
 Charge press. hPa: 1000
 TD travel mm: 2.30...3.10
 mm: (2.00...3.40)
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)
 4th speed 1/min: 900
 Charge press. hPa: 1000
 TD travel mm: 0.30...1.10
 mm: (0.10...1.30)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 2.80...3.40
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.80...5.40
 3rd speed 1/min: 1300
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.60...6.20

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
 Charge-air pressure-setting
 point hPa: 300
 Del. quantity cm³: 55.50...56.50
 1000S.: (53.70...58.30)
 3rd speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm³: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³: 20.00...26.00
 1000S.: (18.50...27.50)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 Del. quantity cm³: 65.50...68.50
 1000S.: (64.00...70.00)
 12th speed 1/min: 1100
 Charge press. hPa: 1000
 Del. quynity cm³: 66.50...67.50
 1000S.: (64.70...69.30)
 18th speed 1/min: 600
 Del. quantity cm³: 45.00...46.00
 1000S.: (43.20...47.80)
 20th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³: 54.50...58.50
 1000S.: (53.50...59.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1480

Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
 Del. quantity cm³: 18.00...22.00
 1000S.: (16.00...24.00)
 Dispersion cm³: 3.0
 1000S.: (3.5)
 2nd speed 1/min: 380
 Del. quantity cm³: 4.50...11.50
 1000S.: (4.00...12.00)
 3rd speed 1/min: 420
 Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
 Del. quantity cm³: 75.00...105.00
 1000S.: (75.00...105.00)
 2nd speed 1/min: 450
 Del. quantity cm³: 43.00...58.00
 1000S.: (43.00...58.00)

4th speed 1/min: 100
 Del. quantity cm³: 70.00...110.00
 1000S.: (70.00...110.00)

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: - |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.1...1.5 |
| Ya | mm: 36.2...40.2 |
| Yb | mm: 43.7...52.3 |

Remarks:

Pushing electromagnet.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet :
 Edition : 12.06.92
 replaces : 03.08.88
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1350R257
 Type number : 0 460 414 039
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8040.25.200+220

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.4
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 3.80...4.20
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 5.70...6.30
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 95.00...96.00
 Shutoff electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 68.50...69.50
 Shutoff electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 22.00...26.00
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1500
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 34.00...40.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 90.00...140.00
 mind 1000S.: 90.00
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350
 Charge press hPa: 1000
 TD travel mm: 6.30...7.10
 mm: (6.00...7.40)

Shutoff

electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 3.80...4.20
 mm: (3.30...4.70)

Shutoff

electromagnet Volt: 24
 4th speed 1/min: 800
 Charge press hPa: 1000
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)

Shutoff

electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.60...4.20
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 1350
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.00...7.60
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1350
 Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500
 Charge-air pressure-setting point hPa: 250
 LDA-stroke mm: 3.0
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 79.00...80.00
 1000s.: (75.50...83.50)
 3rd speed 1/min: 1600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 34.00...40.00
 1000s.: (31.00...43.00)
 9th speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 89.00...92.00
 1000s.: (87.00...94.00)
 12th speed 1/min: 800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 95.00...96.00
 1000s.: (92.00...99.00)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 68.50...69.50
 1000s.: (65.50...72.50)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 88.00...91.00
 1000s.: (86.50...92.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1350
 Charge press. hPa: 1000
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

| | | |
|---|---|------------------------------------|
| Shutoff | XK | mm: 17.0...19.0 |
| electromagnet volt: 24 | XL | mm: 14.2...17.6 |
| Electr. shutoff: | Ya | mm: 37.9...39.9 |
| | Yb | mm: 45.4...50.7 |
| 1st speed 1/min: 350 | Remarks: | |
| Del. quantity cm ³ /: 0.00...3.00 | Overflow restriction 0.55 mm - Part No. | |
| 1000s.: (0.00...3.00) | .303 | : |
| Idle delivery: | | * Correction at adjusting nut (46) |
| 1st speed 1/min: 350 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 22.00...26.00 | | |
| 1000s.: (19.00...29.00) | | |
| Dispersion cm ³ /: 3.5 | | |
| 1000s.: (4.0) | | |
| 2nd speed 1/min: 400 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 2.50...9.50 | | |
| 1000s.: (2.50...9.50) | | |
| 3rd speed 1/min: 430 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 0.00...3.00 | | |
| 1000s.: (0.00...3.00) | | |
| Automatic starting fuel delivery: | | |
| 1st speed 1/min: 150 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 90.00...140.00 | | |
| 1000s.: (90.00...140.00) | | |
| 2nd speed 1/min: 250 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 40.00...60.00 | | |
| 1000s.: (40.00...60.00) | | |
| 4th speed 1/min: 100 | | |
| Shutoff | | |
| electromagnet Volt: 24 | | |
| Del. quantity cm ³ /: 90.00...140.00 | | |
| 1000s.: (90.00...140.00) | | |
| Shutoff electromagnet: | | |
| Cut-in | | |
| min voltage : 20.0 | | |
| Rated voltage : 24.0 | | |
| Mounting and assembly dimensions: | | |
| KF mm: 5.1...5.5 | | |
| MS mm: 1.2...1.6 | | |
| SVS max. mm: 5.3 | | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 12.06.92
 replaces : 03.08.88
 Calibrating oil : ISO-4113
 Injection pump : VE4/11F1500R264
 Type number : 0 460 414 040
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8040.05.200
 Power KW: 65

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 3.50...3.90
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 4.50...5.10
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 55.00...56.00
 Shutoff electromagnet Volt: 24
 Dispersion cm³/: 3.5
 1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 325
 Del. quantity cm³/
 1000S.: 7.00...11.00
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1600
 Del. quantity cm³/
 1000S.: 38.00...44.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...110.00
 mind 1000S.: 60.00
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
 TD travel mm: 6.20...7.00
 mm: (5.90...7.30)

Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1000
 TD travel mm: 3.50...3.90
 mm: (3.00...4.40)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 700
 TD travel mm: 0.60...1.40
 mm: (0.30...1.70)
 Shutoff
 electromagnet Volt: 24
 5th speed 1/min: 1300
 TD travel mm: 5.80...6.40
 mm: (5.40...6.80)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 2nd speed 1/min: 700
 Supply-pump pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 4.50...5.10
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 1500
 Supply-pump pressure bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 700
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1660
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 18.00...26.00
 1000s.: (17.00...27.00)
 3rd speed 1/min: 1700
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1600
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 38.00...44.00
 1000s.: (35.00...47.00)
 9th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.50...54.50
 1000s.: (50.00...56.00)
 10th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.00...54.00
 1000s.: (49.50...55.50)
 12th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 55.00...56.00
 1000s.: (52.50...58.50)
 20th speed 1/min: 700
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 53.00...56.00
 1000s.: (51.50...57.50)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1500
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 325
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 7.00...11.00
 1000s.: (5.00...13.00)
 Dispersion cm³/: 3.5
 1000s.: (3.5)
 2nd speed 1/min: 360
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 1.50...7.50
 1000s.: (0.50...8.50)
 3rd speed 1/min: 420
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...95.00
1000s.: (65.00...95.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.00...25.00
1000s.: (5.00...25.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000s.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.2...5.5 |
| MS | mm: 1.7...2.1 |
| SVS max. | mm: 4.6 |
| XK | mm: 17.0...19.0 |
| XL | mm: 13.1...16.5 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 42.9...48.3 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 12.06.92
 replaces : 20.07.87
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266
 Type number : 0 460 414 041
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : 500 HYDROVAN

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 3J3

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.5
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.42
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Setting value mm: 2.40...2.80

Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Setting value bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 25.00...26.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/ : 3.5
 1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 11.00...15.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1600
 Del. quantity cm³/
 1000S.: 12.00...18.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 70.00...100.00
 mind 1000S.: 70.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
 TD travel mm: 3.70...4.50
 mm: (3.40...4.80)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 TD travel mm: 2.40...2.80
 mm: (1.90...3.30)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 700

TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1350

TD travel mm: 3.40...4.20
mm: (3.10...4.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700

Supply-pump
pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1100

Supply-pump
pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500

Supply-pump
pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600

Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1500

Shutoff
electromagnet Volt: 12

Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1650

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1600

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 12.00...18.00
1000S.: (10.00...20.00)

9th speed 1/min: 1500

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 48.50...51.50
1000S.: (47.00...53.00)

10th speed 1/min: 1100

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 49.50...52.50
1000S.: (48.00...54.00)

11th speed 1/min: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 35.00...37.00
1000S.: -

12th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 25.00...26.00
1000S.: (23.00...28.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 11.00...15.00
1000S.: (9.00...17.00)

Dispersion cm³: 3.0
1000S.: (3.0)

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 3.00...9.00
1000S.: (1.50...10.50)

3rd speed 1/min: 460

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...5.00
1000S.: (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 36.00...52.00
1000S.: (36.00...52.00)

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 27.50...42.50
1000S.: (27.50...42.50)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min. voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: K-OT |
| MS | mm: 1.2..1.45 |
| SVS max. | mm: 3.8 |
| Ya | mm: 28.5...30.5 |
| Yb | mm: 59.7...70.1 |

Remarks:

Overflow restriction 0.55 mm - Part No.
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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 12.06.92
 replaces : 07.11.88
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R274
 Type number : 0 460 414 045
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : MARINE TC 4500

Power KW: 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.28
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 800
 Setting value mm: 4.20...4.60

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 800
 Setting value bar: 7.10...7.70

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 61.00...62.00
 Dispersion cm³/: 4.0
 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 15.00...16.00
 Dispersion cm³/: 4.0
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 10.00...12.00
 Del. quantity cm³/: 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 24.00...26.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 62.00...98.00
 mind 1000S.: 62.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1500
 Charge press. hPa: 800
 TD travel mm: 4.20...4.60
 mm: (3.70...5.10)
 4th speed 1/min: 1000
 Charge press. hPa: 800
 TD travel mm: 1.20...2.00
 mm: (0.90...2.30)
 5th speed 1/min: 1800
 Charge press. hPa: 800

TD travel mm: 4.90...5.70
mm: (4.60...6.00)

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump pressure bar: 6.10...6.70
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump pressure bar: 7.10...7.70
3rd speed 1/min: 1800
Charge press. hPa: 800
Supply-pump pressure bar: 7.70...8.30

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 800
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 2250
Charge press. hPa: 800
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600
Charge-air pressure-setting point hPa: 300
Del. quantity cm³/: 35.50...36.50
1000S.: (32.50...39.50)
3rd speed 1/min: 2600
Charge press. hPa: 800
Del. quantity cm³/: 0.50...6.50
1000S.: (0.00...7.00)
5th speed 1/min: 2500
Charge press. hPa: 800
Del. quantity cm³/: 24.00...26.00
1000S.: (21.00...29.00)
9th speed 1/min: 2250
Charge press. hPa: 800
Del. quantity cm³/: 64.50...68.50
1000S.: (63.50...69.50)
12th speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/: 61.00...62.00
1000S.: (58.50...64.50)
18th speed 1/min: 600
Del. quantity cm³/: 15.00...16.00
1000S.: (12.50...18.50)
20th speed 1/min: 600
Charge press. hPa: 800
Del. quantity cm³/: 52.00...58.00
1000S.: -

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2250
Charge press. hPa: 800
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/: 10.00...12.00
1000S.: (7.00...15.00)
Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 500
Del. quantity cm³/: 2.00...8.00
1000S.: (1.50...8.50)

Automatic starting fuel delivery:

2nd speed 1/min: 500
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Del. quantity cm³/: 62.00...98.00
1000S.: (62.00...98.00)

Shutoff electromagnet:

Cut-in min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: K-OT |
| MS | mm: 0.6...1.0 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 54.0...66.0 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
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* Correction at adjusting nut (46)

Pushing electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 12.05.92
replaces : 11.11.78
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R275
Type number : 0 460 414 046
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 500 SERIES FLT BS

TEST BENCH REQUIREMENTS

Overflow restrictor: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : meternah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.50...2.90
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 4.90...5.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Del. quantity cm³/
1000s.: 46.00...47.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000s.: 10.00...14.00
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1550
Del. quantity cm³/
1000s.: 27.00...37.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000s.: 70.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350

| | | | | |
|--------------------------------------|---------------------------------------|--|--------------------------------------|--|
| TD travel | mm: 3.60...4.40 mm: (3.30...4.70) | | KSB/AFB valve | Volt: 12 |
| KSB/AFB valve | Volt: 12 | | Shutoff electromagnet | Volt: 12 |
| Shutoff | | | Overflow quantity | : 41.70...83.40 cm ³ /10s: (41.70...83.40) |
| electromagnet | Volt: 12 | | 2nd speed | 1/min: 1450 |
| 3rd speed | 1/min: 1100 | | KSB/AFB valve | Volt: 12 |
| TD travel | mm: 2.50...2.90 mm: (2.00...3.40) | | Shutoff electromagnet | Volt: 12 |
| KSB/AFB valve | Volt: 12 | | Overflow quantity | : 55.60...139.00 cm ³ /10s: (55.60...139.00) |
| Shutoff | | | Delivery-quant. and breakaway char.: | |
| electromagnet | Volt: 12 | | 2nd speed | 1/min: 1630 |
| 4th speed | 1/min: 700 | | KSB/AFB valve | Volt: 12 |
| TD travel | mm: 0.10...0.90 mm: (-0.20...1.20) | | Shutoff electromagnet | Volt: 12 |
| KSB/AFB valve | Volt: 12 | | Del. quantity cm ³ : | 0.00...3.00 1000s.: (0.00...3.00) |
| Shutoff | | | 3rd speed | 1/min: 1570 |
| electromagnet | Volt: 12 | | KSB/AFB valve | Volt: 12 |
| 5th speed | 1/min: 1500 | | Shutoff electromagnet | Volt: 12 |
| TD travel | mm: 3.70...4.50 mm: (3.40...4.80) | | Del. quantity cm ³ : | 8.00...24.00 1000s.: (6.00...26.00) |
| KSB/AFB valve | Volt: 12 | | 5th speed | 1/min: 1550 |
| Shutoff | | | KSB/AFB valve | Volt: 12 |
| electromagnet | Volt: 12 | | Shutoff electromagnet | Volt: 12 |
| 8th speed | 1/min: 700 | | Del. quantity cm ³ : | 27.00...37.00 1000s.: (26.00...38.00) |
| TD travel | mm: 1.50...2.90 mm: (1.00...3.40) | | 9th speed | 1/min: 1450 |
| Shutoff | | | KSB/AFB valve | Volt: 12 |
| electromagnet | Volt: 12 | | Shutoff electromagnet | Volt: 12 |
| Supply-pump pressure characteristic: | | | Del. quantity cm ³ : | 45.00...48.00 1000s.: (43.50...49.50) |
| 1st speed | 1/min: 700 | | 12th speed | 1/min: 1200 |
| Supply-pump pressure | bar: 3.50...4.10 | | KSB/AFB valve | Volt: 12 |
| KSB/AFB valve | Volt: 12 | | Shutoff electromagnet | Volt: 12 |
| Shutoff | | | Del. quantity cm ³ : | 46.00...47.00 1000s.: (44.00...49.00) |
| electromagnet | Volt: 12 | | 15th speed | 1/min: 800 |
| 2nd speed | 1/min: 1100 | | KSB/AFB valve | Volt: 12 |
| Supply-pump pressure | bar: 4.90...5.50 | | Shutoff electromagnet | Volt: 12 |
| KSB/AFB valve | Volt: 12 | | Del. quantity cm ³ : | 29.50...32.50 1000s.: - |
| Shutoff | | | 20th speed | 1/min: 600 |
| electromagnet | Volt: 12 | | | |
| Overflow quantity at overflow valve: | | | | |
| 1st speed | 1/min: 600 | | | |

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...23.00
1000S.: (18.50...24.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

KSB/AFB
valve Volt: 12

Idle delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)
Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 430

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 350

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...9.00
1000S.: (1.50...10.50)

Automatic starting fuel delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.00...45.00
1000S.: (29.00...45.00)

2nd speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 19.00...35.00
1000S.: (19.00...35.00)

4th speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: K-OT |
| MS | mm: 0.9..1.15 |
| SVS max. | mm: 3.1 |
| XK | mm: 17.0...19.0 |
| XL | mm: 11.9...15.3 |
| Ya | mm: 37.0...39.0 |
| Yb | mm: 58.7...69.5 |

Remarks:

Overflow restriction 0.55 mm - Part No.
.303 : -

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC
Edition : 09.06.92
replaces : 12.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/11F1090R176-1
Type number : 0 460 414 050

Customer-specific information
Customer : IHC-CASE

Engine : D239-E333, V833

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 4.80...5.20

Supply-pump pressure

Speed 1/min: 800

Setting value bar: 5.10...5.70

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 81.50...82.50
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 21.50...25.50
Del. quantity cm³/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 12.00...18.00

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 100

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 1.70...2.50
mm: (1.40...2.80)
2nd speed 1/min: 800
TD travel mm: 4.80...5.20
mm: (4.30...5.70)
3rd speed 1/min: 1050
TD travel mm: 5.40...6.20
mm: (5.10...6.50)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 3.50...4.10
2nd speed 1/min: 800
Supply-pump
pressure bar: 5.10...5.70
3rd speed 1/min: 1050
Supply-pump
pressure bar: 6.00...6.60

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 55.50...139.00
quantity cm³/10s: (40.50...153.00)
2nd speed 1/min: 1090
Overflow : 55.50...139.00
quantity cm³/10s: (40.50...153.00)

Delivery quant. and breakaway char.:

2nd speed 1/min: 1270
Del. quantity cm³/: 0.00...2.00
1000s.: (0.00...2.00)
3rd speed 1/min: 1200
Del. quantity cm³/: 12.00...18.00
1000s.: (10.50...19.50)
4th speed 1/min: 1150
Del. quantity cm³/: 47.00...53.00
1000s.: (45.50...54.50)
5th speed 1/min: 1050
Del. quantity cm³/: 78.50...81.50
1000s.: (77.40...82.60)
6th speed 1/min: 800
Del. quantity cm³/: 81.50...82.50
1000s.: (79.40...84.60)
7th speed 1/min: 650
Del. quantity cm³/: 75.00...79.00
1000s.: (73.60...80.40)
8th speed 1/min: 500
Del. quantity cm³/: 65.50...69.50
1000s.: (64.10...70.90)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1090
Del. quantity cm³/: -
1000s.: -

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/: 21.50...25.50
1000s.: (19.00...28.00)
Dispersion cm³/: 3.5
1000s.: -
2nd speed 1/min: 400
Del. quantity cm³/: 4.50...10.50
1000s.: (3.00...12.00)
3rd speed 1/min: 460
Del. quantity cm³/: 0.00...2.00
1000s.: (0.00...2.00)

Automatic starting fuel delivery:

1st speed 1/min: 220
Del. quantity cm³/: 100.00...
1000s.: -

2nd speed 1/min: 340

Del. quantity cm³/: ...70.00
1000s.: -

4th speed 1/min: 100
Del. quantity cm³/: 100.00...
1000s.: -

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.1...5.4 |
| MS | mm: 1.0..1.25 |
| SVS max. | mm: 3.2 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 46.8...56.8 |

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 15.06.92
 replaces : 21.07.88
 Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R290
 Type number : 0 460 414 053
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : Prima 4000NA MARINE

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.37
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
 Setting value mm: 3.20...3.60
 AFB/AFB valve Volt: 12

Supply-pump pressure

Speed 1/min: 1800
 Setting value bar: 6.20...6.80
 KSB/AFB valve Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
 Del. quantity cm³/ 1000S.: 17.50...18.50
 KSB/AFB valve Volt: 12
 Dispersion cm³/: 4.0 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/ 1000S.: 8.00...10.00
 KSB/AFB valve Volt: 12
 Del. quantity cm³/: 3.0 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2150
 Del. quantity cm³/ 1000S.: 23.50...25.50
 KSB/AFB valve Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 55.00...85.00
 mind 1000S.: 55.00
 KSB/AFB Valve Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 TD travel mm: 3.70...4.50
 mm: (3.40...4.80)
 KSB/AFB valve Volt: 12
 3rd speed 1/min: 1800
 TD travel mm: 3.20...3.60
 mm: (2.70...4.10)
 KSB/AFB valve Volt: 12
 4th speed 1/min: 1500

| | | |
|--------------------------------------|--|---|
| TD travel | mm: 1.60...2.40 mm: (1.30...2.70) | 12th speed 1/min: 500 KSB/AFB valve Volt: 12 Del. quantity cm ³ : 17.50...18.50 1000s.: (13.00...23.00) |
| KSB/AFB valve | Volt: 12 | Mech. shutoff: |
| 8th speed | 1/min: 1200 | Mech. Abstellung: |
| TD travel | mm: 2.10...4.10 mm: (1.90...4.30) | 1st speed 1/min: 2000 Del. quantity cm ³ : 0.00...3.00 1000s.: (0.00...3.00) |
| 9th speed | 1/min: 500 | KSB/AFB valve Volt: 12 |
| TD travel | mm: 2.30...2.50 mm: (1.60...3.20) | Electr. shutoff: |
| Supply-pump pressure characteristic: | | |
| 1st speed | 1/min: 2000 | 1st speed 1/min: 400 Del. quantity cm ³ : 0.00...3.00 1000s.: (0.00...3.00) |
| Supply-pump pressure | bar: 6.80...7.40 | Shutoff electromagnet volt: 12 |
| KSB/AFB valve | Volt: 12 | KSB/AFB valve Volt: 12 |
| 2nd speed | 1/min: 1800 | Idle delivery: |
| Supply-pump pressure | bar: 6.20...6.80 | 1st speed 1/min: 400 KSB/AFB valve Volt: 12 |
| KSB/AFB valve | Volt: 12 | valve Volt: 12 Del. quantity cm ³ : 8.00...10.00 1000s.: (5.00...13.00) |
| 4th speed | 1/min: 1000 | Dispersion cm ³ : 3.0 1000s.: (3.0) |
| Supply-pump pressure | bar: 4.30...4.90 | 4th speed 1/min: 500 KSB/AFB valve Volt: 12 Del. quantity cm ³ : 1.00...7.00 1000s.: - |
| KSB/AFB valve | Volt: 12 | Automatic starting fuel delivery: |
| Overflow quantity at overflow valve: | | |
| 1st speed | 1/min: 500 | 2nd speed 1/min: 450 KSB/AFB valve Volt: 12 Del. quantity cm ³ : 20.00...40.00 1000s.: (20.00...40.00) |
| KSB/AFB valve | Volt: 12 | 4th speed 1/min: 100 KSB/AFB valve Volt: 12 Del. quantity cm ³ : 55.00...85.00 1000s.: (55.00...85.00) |
| Overflow quantity | : 41.70...83.40 cm ³ /10s: (41.70...83.40) | Shutoff electromagnet: |
| 2nd speed | 1/min: 2000 | Cut-in min voltage : 10.0 |
| KSB/AFB valve | Volt: 12 | Rated voltage : 12.0 |
| Overflow quantity | : 55.60...139.00 cm ³ /10s: (55.60...139.00) | |
| Delivery-quant. and breakaway char.: | | |
| 3rd speed | 1/min: 2200 | |
| KSB/AFB valve | Volt: 12 | |
| Del. quantity cm ³ : | 0.00...15.00 1000s.: (0.00...15.00) | |
| 5th speed | 1/min: 2150 | |
| KSB/AFB valve | Volt: 12 | |
| Del. quantity cm ³ : | 23.50...25.50 1000s.: (20.50...28.50) | |
| 9th speed | 1/min: 2000 | |
| KSB/AFB valve | Volt: 12 | |
| Del. quantity cm ³ : | 60.00...65.00 1000s.: (59.00...66.00) | |

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.0...5.4 |
| MS | mm: 1.1...1.5 |
| SVS max. | mm: 5.7 |
| Ya | mm: 37.0...39.0 |
| Yb | mm: 66.8...68.2 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1200R277-2
 Type number : 0 460 414 077
 Customer Part-No. :

Customer-specific information
 Customer : CASE

Engine : D 268/985

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
 Setting value mm: 4.50...4.90

Supply-pump pressure

Speed 1/min: 700
 Setting value bar: 3.40...4.00

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 92.00...93.00
 Dispersion cm³/: 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 16.50...20.50
 Del. quantity cm³/: 3.0
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1260
 Del. quantity cm³/
 1000S.: 71.00...77.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 95.00...145.00
 mind 1000S.: 95.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 2nd speed | 1/min: 1150 |
| TD travel | mm: 7.20...8.00 |
| | mm: (6.90...8.30) |
| 3rd speed | 1/min: 700 |
| TD travel | mm: 4.50...4.90 |
| | mm: (4.00...5.40) |
| 4th speed | 1/min: 500 |
| TD travel | mm: 2.60...3.40 |
| | mm: (2.30...3.70) |

Supply-pump pressure characteristic:

| | |
|-------------|---------------------------|
| 1st speed | 1/min: 500 |
| Supply-pump | pressure bar: 2.70...3.30 |
| 2nd speed | 1/min: 700 |
| Supply-pump | pressure bar: 3.40...4.00 |
| 3rd speed | 1/min: 1150 |
| Supply-pump | pressure bar: 5.00...5.60 |

Overflow quantity at overflow valve:

| | |
|-----------|--------------------------|
| 1st speed | 1/min: 500 |
| Overflow | : 41.70...83.40 |
| quantity | cm³/10s: (26.70...98.40) |

2nd speed 1/min: 1150
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1400
Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)
5th speed 1/min: 1260
Del. quantity cm³: 71.00...77.00
1000s.: (69.50...78.50)
8th speed 1/min: 1290
Del. quantity cm³: 10.00...60.00
1000s.: (10.00...60.00)
9th speed 1/min: 1150
Del. quantity cm³: 94.00...97.00
1000s.: (92.50...98.50)
12th speed 1/min: 700
Del. quantity cm³: 92.00...93.00
1000s.: (90.00...95.00)
17th speed 1/min: 1340
Del. quantity cm³: 0.00...10.00
1000s.: (0.00...10.00)
20th speed 1/min: 500
Del. quantity cm³: 89.50...93.50
1000s.: (88.00...95.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1150
Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery.

1st speed 1/min: 375
Del. quantity cm³: 16.50...20.50
1000s.: (14.00...23.00)
Dispersion cm³: 3.0
1000s.: (3.5)
2nd speed 1/min: 450
Del. quantity cm³: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³: 110.00...130.00
1000s.: (110.00...130.00)

2nd speed 1/min: 450
Del. quantity cm³: 90.00...110.00
1000s.: (90.00...110.00)

4th speed 1/min: 100
Del. quantity cm³: 95.00...145.00
1000s.: (95.00...145.00)

Mounting and assembly dimensions:

Designation

| | |
|----|---------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.3...5.7 |
| MS | mm: 0.9...1.1 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
 Edition : 05.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/11F1200R277-3
 Type number : 0 460 414 084
 Customer Part-No. :

Customer-specific information
 Customer : CASE

Engine : DT 268/985 NAO

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
 Setting value mm: 4.50...4.90

Supply-pump pressure

Speed 1/min: 700
 Setting value bar: 3.40...4.00

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 109.50...110.50
 Dispersion cm³/: 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 16.50...20.50
 Del. quantity cm³/: 3.0
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1260
 Del. quantity cm³/
 1000S.: 71.00...77.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 95.00...145.00
 mind 1000S.: 95.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|-----------|-------------------|
| 2nd speed | 1/min: 1150 |
| TD travel | mm: 7.20...8.00 |
| | mm: (6.90...8.30) |
| 3rd speed | 1/min: 700 |
| TD travel | mm: 4.50...4.90 |
| | mm: (4.00...5.40) |
| 4th speed | 1/min: 500 |
| TD travel | mm: 2.60...3.40 |
| | mm: (2.30...3.70) |

Supply-pump pressure characteristic:

| | |
|-------------------------|------------------|
| 1st speed | 1/min: 500 |
| Supply-pump pressure | bar: 2.70...3.30 |
| 2nd speed | 1/min: 700 |
| Supply-pump pressure | bar: 3.40...4.00 |
| 3rd speed | 1/min: 1150 |
| Supply-pump pressure | bar: 4.90...5.50 |

Overflow quantity at overflow valve:

| | |
|----------------------|--------------------------|
| 1st speed | 1/min: 500 |
| Overflow quantity | cm³/10s: 41.70...83.40 |
| | cm³/10s: (26.70...98.40) |

2nd speed 1/min: 1150
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1340
Del. quantity cm³/: 0.00...10.00
1000s.: (0.00...10.00)
4th speed 1/min: 1290
Del. quantity cm³/: 10.00...60.00
1000s.: (10.00...60.00)
5th speed 1/min: 1260
Del. quantity cm³/: 71.00...77.00
1000s.: (69.50...78.50)
9th speed 1/min: 1150
Del. quantity cm³/: 103.50...106.50
1000s.: (102.00...108.00)
12th speed 1/min: 700
Del. quantity cm³/: 109.50...110.50
1000s.: (107.50...112.50)
20th speed 1/min: 500
Del. quantity cm³/: 101.00...105.00
1000s.: (99.50...106.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery.

1st speed 1/min: 375
Del. quantity cm³/: 16.50...20.50
1000s.: (14.00...23.00)
Dispersion cm³/: 3.0
1000s.: (3.5)
2nd speed 1/min: 450
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 110.00...130.00
1000s.: (110.00...130.00)

2nd speed 1/min: 450
Del. quantity cm³/: 90.00...110.00
1000s.: (90.00...110.00)

4th speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
1000s.: (95.00...145.00)

Mounting and assembly dimensions:

| Designation | |
|-------------|---------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.3...5.7 |
| MS | mm: 0.9...1.1 |
| SVS max. | mm: 1.2 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 09.06.92
replaces : 03.12.86
Calibrating oil : ISO-4113

Injection pump : VES/11F1900L179
Type number : 0 460 415 007
Customer Part-No. :

Customer-specific information
Customer : VM MOTORI

Engine : HR 592 HTJ/9 2.991L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Perforated-place
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 4.90...5.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 66.50...67.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 41.50...42.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 420
Del. quantity cm³/
1000S.: 20.50...24.50
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2060
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 36.00...42.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...76.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

| | | | |
|--------------------------------------|--|---------------------------------|-------------------|
| 2nd speed | 1/min: 1900 | LDA-stroke | mm: 4.5 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 7.10...7.90 | electromagnet Volt: | 12 |
| | mm: (6.80...8.20) | Del. quantity cm ³ : | 51.00...52.00 |
| Shutoff | | 1000s.: | (48.10...54.90) |
| electromagnet Volt: | 12 | 3rd speed | 1/min: 2200 |
| 3rd speed | 1/min: 1500 | Charge press. | hPa: 1000 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 4.90...5.30 | electromagnet Volt: | 12 |
| | mm: (4.40...5.80) | Del. quantity cm ³ : | 0.00...3.00 |
| Shutoff | | 1000s.: | (0.00...3.00) |
| electromagnet Volt: | 12 | 5th speed | 1/min: 2060 |
| 4th speed | 1/min: 1000 | Charge press. | hPa: 1000 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 1.50...2.30 | electromagnet Volt: | 12 |
| | mm: (1.20...2.60) | Del. quantity cm ³ : | 36.00...42.00 |
| Shutoff | | 1000s.: | (34.50...43.50) |
| electromagnet Volt: | 12 | 8th speed | 1/min: 2160 |
| Supply-pump pressure characteristic: | | Charge press. | hPa: 1000 |
| 1st speed | 1/min: 1900 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: | 12 |
| Supply-pump | | Del. quantity cm ³ : | 2.00...8.00 |
| pressure | bar: 6.00...6.60 | 1000s.: | (0.50...09.5) |
| Shutoff | | 9th speed | 1/min: 1900 |
| electromagnet Volt: | 12 | Charge press. | hPa: 1000 |
| 2nd speed | 1/min: 1500 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: | 12 |
| Supply-pump | | Del. quantity cm ³ : | 59.00...62.00 |
| pressure | bar: 4.70...5.30 | 1000s.: | (57.80...63.20) |
| Shutoff | | 12th speed | 1/min: 1500 |
| electromagnet Volt: | 12 | Charge press. | hPa: 1000 |
| 3rd speed | 1/min: 600 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: | 12 |
| Supply-pump | | Del. quynity cm ³ : | 66.50...67.50 |
| pressure | bar: 1.70...2.30 | 1000s.: | (64.30...69.70) |
| Shutoff | | 18th speed | 1/min: 600 |
| electromagnet Volt: | 12 | Shutoff | |
| Overflow quantity at overflow valve: | | electromagnet Volt: | 12 |
| 1st speed | 1/min: 600 | Del. quantity cm ³ : | 41.50...42.50 |
| Shutoff | | 1000s.: | (38.60...45.40) |
| electromagnet Volt: | 12 | Mech. shutoff: | |
| Overflow | : 55.60...139.00 | Electr. shutoff: | |
| quantity | cm ³ /10s: (40.50...153.00) | 1st speed | 1/min: 1900 |
| 2nd speed | 1/min: 1900 | Idle delivery: | |
| Charge press. | hPa: 1000 | 1st speed | 1/min: 420 |
| Shutoff | | Shutoff | |
| electromagnet Volt: | 12 | electromagnet Volt: | 12 |
| Overflow | : 55.60...139.00 | Del. quantity cm ³ : | 20.50...24.50 |
| quantity | cm ³ /10s: (40.60...153.00) | 1000s.: | (18.00...27.00) |
| Delivery-quant. and breakaway char.: | | Dispersion | cm ³ : |
| 1nd speed | 1/min: 700 | 3.5 | |
| Charge-air pressure-setting | | 1000s.: | (3.5) |
| point | hPa: 300 | 2nd speed | 1/min: 500 |
| | | Shutoff | |
| | | electromagnet Volt: | 12 |

Det. quantity cm³/: 14.00...20.00
1000s.: (12.50...21.50)
4th speed 1/min: 650
Shutoff
electromagnet Volt: 12
Det. quantity cm³/: 0.00...2.00
1000s.: (0.00...2.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 12
Det. quantity cm³/: 50.00...76.00
1000s.: (50.00...76.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Det. quantity cm³/: 29.00...55.00
1000s.: (29.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Det. quantity cm³/: 50.00...76.00
1000s.: (50.00...76.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.9...6.1
MS mm: 0.9...1.1
SVS max. mm: 3.2
LDA stroke mm: 4.5

Remarks:

:
Pushing electromagnet.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
 Edition : 09.06.92
 replaces : 03.08.88
 Calibrating oil : ISO-4113

Injection pump : VE6/11F1900L178
 Type number : 0 460 416 035
 Customer Part-No. :

Customer-specific information
 Customer : VM

Engine : HR692HTJ/9

Power KW: 132

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 750
 Setting value mm: 4.70...5.10

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 750
 Setting value bar: 5.50...6.10

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 750
 Del. quantity cm³/
 1000S.: 66.00...67.00
 Dispersion cm³/ : 3.5
 1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 47.50...48.50

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 18.00...22.00
 Del. quantity cm³/ : 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2000
 Charge press hPa: 750
 Del. quantity cm³/
 1000S.: 46.00...52.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 40.00...80.00
 mind 1000S.: 40.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|--------------|-------------------|
| 2nd speed | 1/min: 1850 |
| Charge press | hPa: 750 |
| TD travel | mm: 6.50...7.30 |
| | mm: (6.20...7.60) |
| 3rd speed | 1/min: 1500 |
| Charge press | hPa: 750 |
| TD travel | mm: 4.70...5.10 |
| | mm: (4.20...5.60) |

| | | |
|--------------------------------------|--|---|
| 4th speed | 1/min: 1000 | Mech. shutoff: |
| Charge press | hPa: 750 | Mech. Abstellung: |
| TD travel | mm: 1.80...2.60 mm: (1.50...2.90) | 1st speed 1/min: 1850 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) |
| Supply-pump pressure characteristic: | | Electr. shutoff: |
| 1st speed | 1/min: 1850 | 1st speed 1/min: 400 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) |
| Charge press. | hPa: 750 | Shutoff electromagnet volt: 12 |
| Supply-pump pressure | bar: 6.70...7.30 | Idle delivery: |
| 2nd speed | 1/min: 1500 | 1st speed 1/min: 400 Del. quantity cm ³ /: 18.00...22.00 1000S.: (16.00...24.00) |
| Charge press. | hPa: 750 | Dispersion cm ³ /: 3.5 1000S.: (3.5) |
| Supply-pump pressure | bar: 5.50...6.10 | 2nd speed 1/min: 500 Del. quantity cm ³ /: 7.50...12.50 1000S.: (5.50...14.50) |
| 3rd speed | 1/min: 600 | 4th speed 1/min: 600 Del. quantity cm ³ /: 0.00...4.00 1000S.: (0.00...4.00) |
| Charge press. | hPa: 750 | Automatic starting fuel delivery: |
| Supply-pump pressure | bar: 2.40...3.00 | 1st speed 1/min: 350 Del. quantity cm ³ /: 45.00...85.00 1000S.: (45.00...85.00) |
| Overflow quantity at overflow valve: | | 2nd speed 1/min: 450 Del. quantity cm ³ /: 28.00...48.00 1000S.: (28.00...48.00) |
| 1st speed | 1/min: 600 | 4th speed 1/min: 100 Del. quantity cm ³ /: 40.00...80.00 1000S.: (40.00...80.00) |
| Charge press. | hPa: 750 | Mounting and assembly dimensions: |
| Overflow | : 41.70...83.40 | Designation |
| quantity | cm ³ /10s: (41.70...83.40) | K mm: - |
| 2nd speed | 1/min: 1850 | KF mm: 6.2...6.6 |
| Charge press. | hPa: 750 | MS mm: 0.8...1.2 |
| Overflow | : 55.60...139.00 | SVS max. mm: 4.7 |
| quantity | cm ³ /10s: (55.60...139.00) | Ya mm: 37.2...39.2 |
| Delivery-quant. and breakaway char.: | | Yb mm: 50.5...58.5 |
| 1nd speed | 1/min: 600 | Remarks: |
| Charge-air pressure-setting | | : |
| point | hPa: 300 | : |
| LDA-stroke | mm: 4.0 | |
| Del. quantity cm ³ /: | 53.00...54.00 | |
| | 1000S.: (51.00...56.00) | |
| 3rd speed | 1/min: 2130 | |
| Charge press. | hPa: 750 | |
| Del. quantity cm ³ /: | 2.50...10.50 | |
| | 1000S.: - | |
| 5th speed | 1/min: 2000 | |
| Charge press. | hPa: 750 | |
| Del. quantity cm ³ /: | 46.00...52.00 | |
| | 1000S.: (45.00...53.00) | |
| 9th speed | 1/min: 1850 | |
| Charge press. | hPa: 750 | |
| Del. quantity cm ³ /: | 61.00...64.00 | |
| | 1000S.: (60.30...64.70) | |
| 12th speed | 1/min: 1500 | |
| Charge press. | hPa: 750 | |
| Del. quantity cm ³ /: | 66.00...67.00 | |
| | 1000S.: (64.50...68.50) | |
| 18th speed | 1/min: 600 | |
| Del. quantity cm ³ /: | 47.50...48.50 | |
| | 1000S.: (45.50...50.50) | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.06.92
replaces : 16.12.86
Calibrating oil : ISO-4113

Injection pump : VE6/11F1250R181
Type number : 0 460 416 036
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8065.05.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening Pressure bar: 172.00...175.00

Perforated-place
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 4.90...5.30
Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.20...5.80

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000S.: 33.00...39.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
mind 1000S.: 95.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 4.90...5.30
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
TD travel mm: 5.40...6.20
mm: (5.10...6.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 5.20...5.80
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 1250
 Supply-pump pressure bar: 6.30...6.90
 Shutoff electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Shutoff electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1450
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 2.00...9.00
 1000s.: (1.00...10.00)
 5th speed 1/min: 1350
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 33.00...39.00
 1000s.: (30.00...42.00)
 9th speed 1/min: 1250
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 53.00...56.00
 1000s.: (51.50...57.50)
 12th speed 1/min: 800
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 63.50...64.50
 1000s.: (61.00...67.00)
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 12

Del. quantity cm³: 58.50...61.50
 1000s.: (57.00...63.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1250
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 325
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 325
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 8.00...12.00
 1000s.: (6.00...14.00)
 Dispersion cm³: 3.5
 1000s.: (4.0)
 2nd speed 1/min: 400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 360
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 2.00...8.00
 1000s.: (1.00...9.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 150
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 95.00...145.00
 1000s.: (95.00...145.00)
 2nd speed 1/min: 250
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 40.00...60.00
 1000s.: (40.00...60.00)
 4th speed 1/min: 100
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 95.00...145.00
 1000s.: (95.00...145.00)
 Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.2...5.4 |
| MS | mm: 1.5...1.7 |
| SVS max. | mm: 4.3 |
| XK | mm: 25.0...27.0 |
| XL | mm: 13.4...16.8 |
| Ya | mm: 34.9...36.9 |
| Yb | mm: 45.8...51.1 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 09.06.92
 replaces : 09.85
 Calibrating oil : ISO-4113
 Injection pump : VE6/11F150CR196
 Type number : 0 460 416 042
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-FIAT

Engine : 8060.05.200

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-place
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 3.20...3.60
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 5.40...6.00

Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1300
 Del. quantity cm³/
 1000S.: 70.50...71.50
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³: 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
 Del. quantity cm³/
 1000S.: 8.00...12.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 3.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1650
 Del. quantity cm³/
 1000S.: 37.00...43.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³: 76.00...126.00
 mind 1000S.: 76.00
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
 TD travel mm: 6.20...7.00
 mm: (5.90...7.30)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 TD travel mm: 3.20...3.60
 mm: (2.70...4.10)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 700
 TD travel mm: 0.50...1.30
 mm: (0.20...1.60)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump pressure bar: 4.20...4.80
Shutoff electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump pressure bar: 5.40...6.00
Shutoff electromagnet Volt: 24
3rd speed 1/min: 1500
Supply-pump pressure bar: 7.20...7.80
Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1500
Shutoff electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1750
Shutoff electromagnet Volt: 24
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1650
Shutoff electromagnet Volt: 24
Del. quantity cm³: 37.00...43.00
1000S.: (34.00...46.00)
8th speed 1/min: 1600
Shutoff electromagnet Volt: 24
Del. quantity cm³: 46.00...54.00
1000S.: (45.00...55.00)
9th speed 1/min: 1500
Shutoff electromagnet Volt: 24
Del. quantity cm³: 66.00...69.00
1000S.: (64.50...70.50)
Shutoff electromagnet Volt: 24
12th speed 1/min: 1300
Shutoff electromagnet Volt: 24

Del. quantity cm³: 70.50...71.50
1000S.: (68.00...74.00)
15th speed 1/min: 800
Shutoff electromagnet Volt: 24
Del. quantity cm³: 66.50...69.50
1000S.: (65.00...71.00)
20th speed 1/min: 600
Shutoff electromagnet Volt: 24
Del. quantity cm³: 57.00...61.00
1000S.: (55.50...62.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1500
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325
Shutoff electromagnet Volt: 24
Del. quantity cm³: 8.00...12.00
1000S.: (6.00...14.00)
Dispersion cm³: 3.0
1000S.: (4.0)
2nd speed 1/min: 450
Shutoff electromagnet Volt: 24
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff electromagnet Volt: 24
Del. quantity cm³: 80.00...130.00
1000S.: (80.00...130.00)

2nd speed 1/min: 320
Shutoff electromagnet Volt: 24
Del. quantity cm³: 24.00...44.00
1000S.: (24.00...44.00)

4th speed 1/min: 100
Shutoff electromagnet Volt: 24

Det. quantity cm³/: 76.00...126.00
1000S.: (76.00...126.00)

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.7...5.9 |
| MS | mm: 1.9...2.1 |
| XK | mm: 17.0...19.0 |
| XL | mm: 10.6...14.0 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 41.9...47.3 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.06.92
replaces : 23.08.89
Calibrating oil : ISO-4113

Injection pump : VE6/11F1250R181-1
Type number : 0 460 416 046
Customer Part-No. :

Customer-specific information

Customer : IVECO-FIAT

Engine : 8065.05.290

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 4.70...5.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 71.00...72.00
Shutoff
electromagnet Volt: 24
Dispersion cm³: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 20.00...24.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1380
Del. quantity cm³/
1000S.: 21.00...27.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³: 100.00...150.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 4.70...5.10
mm: (4.20...5.60)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 600
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1250
TD travel mm: 5.30...6.10
mm: (5.00...6.40)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

2nd speed 1/min: 600
 Supply-pump pressure bar: 4.60...5.20
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 6.20...6.80
 Shutoff electromagnet Volt: 24
 4th speed 1/min: 1250
 Supply-pump pressure bar: 7.20...7.80
 Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Shutoff electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1380
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 21.00...27.00
 1000s.: (18.00...30.00)
 8th speed 1/min: 1330
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 48.50...55.50
 1000s.: -
 9th speed 1/min: 1250
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 61.00...64.00
 1000s.: (59.00...66.00)
 12th speed 1/min: 800
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 71.00...72.00
 1000s.: (68.50...74.50)

20th speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 68.50...71.50
 1000s.: (66.50...73.50)

Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: 24

Electr. shutoff:
 1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 20.00...24.00
 1000s.: (18.00...26.00)
 Dispersion cm³/: 3.5
 1000s.: (4.0)
 2nd speed 1/min: 520
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 450
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 7.00...13.00
 1000s.: (6.00...14.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 100.00...150.00
 1000s.: (100.00...150.00)
 2nd speed 1/min: 250
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 57.50...77.50
 1000s.: (57.50...77.50)
 4th speed 1/min: 100
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 100.00...150.00
 1000s.: (100.00...150.00)

Shutoff electromagnet:

Cut-in
min voltage : 22.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation mm:
K 3.2...3.4
KF mm: 5.2...5.4
MS mm: 1.5...1.7
SVS max. mm: 4.3
XK mm: 17.0...19.0
XL mm: 13.5...16.9
Ya mm: 37.9...39.9
Yb mm: 44.5...49.5

Remarks:

:
:

Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
 Edition : 09.06.92
 replaces : 18.07.89
 Calibrating oil : ISO-4113
 Injection pump : VE6/11F1900L218-8
 Type number : 0 460 416 065
 Customer Part-No. :

Customer-specific information
 Customer : PENTA
 Engine : TAMD 41 B
 Power KW: 132

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
 Charge press. hPa: 1000
 Setting value mm: 3.30...3.70

Supply-pump pressure

Speed 1/min: 1200
 Charge press. hPa: 1000
 Setting value bar: 5.90...6.50

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 99.50...100.50
 Dispersion cm³: 5.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
 Del. quantity cm³/
 1000S.: 66.50...67.50

Low-idle speed regulation

Speed 1/min: 325
 Del. quantity cm³/
 1000S.: 25.00...29.00
 Del. quantity cm³: 3.5
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2050
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 34.00...40.00

Start:

Speed 1/min: 100
 Del. quantity cm³: 80.00...120.00
 mind 1000S.: 80.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1200
 Charge press. hPa: 1000
 TD travel mm: 3.30...3.70
 mm: (2.80...4.20)
 4th speed 1/min: 800
 Charge press. hPa: 1000
 TD travel mm: 1.00...2.00
 mm: (0.80...2.20)
 5th speed 1/min: 1900
 Charge press. hPa: 1000
 TD travel mm: 4.00...4.80
 mm: (3.70...5.10)
 7.Rotacao 1/min: 1000
 Charge press. hPa: 1000

| | | |
|--------------------------------------|--|--|
| TD travel | mm: 2.30...3.10 mm: (2.00...3.40) | 15th speed 1/min: 1200 Charge press. hPa: 1000 Del. quantity cm ³ /: 102.50...105.50 1000s.: (100.50...107.50) |
| Supply-pump pressure characteristic: | | |
| 1st speed | 1/min: 1900 | 18th speed 1/min: 650 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: 66.50...67.50 1000s.: (64.00...70.00) |
| Supply-pump pressure | bar: 7.40...8.00 | 20th speed 1/min: 800 |
| 2nd speed | 1/min: 1200 | Charge press. hPa: 1000 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: 88.00...92.00 1000s.: (86.50...93.50) |
| Supply-pump pressure | bar: 5.90...6.50 | Mech. shutoff: Mech. Abstellung: |
| 3rd speed | 1/min: 800 | 1st speed 1/min: 1900 |
| Charge press. | hPa: 1000 | Charge press. hPa: 1000 |
| Supply-pump pressure | bar: 5.00...5.60 | Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Overflow quantity at overflow valve: | | |
| 1st speed | 1/min: 650 | Electr. shutoff: |
| Overflow | : 41.70...83.40 | 1st speed 1/min: 325 |
| quantity | cm ³ /10s: (41.70...83.40) | Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| 2nd speed | 1/min: 1900 | Shutoff electromagnet volt: 12 |
| Charge press. | hPa: 1000 | |
| Overflow | : 55.60...139.00 | |
| quantity | cm ³ /10s: (55.60...139.00) | |
| Delivery-quant. and breakaway char.: | | |
| 1nd speed | 1/min: 800 | Idle delivery: |
| Charge-air pressure-setting point | hPa: 200 | 1st speed 1/min: 325 |
| LDA-stroke | mm: 4.5 | Del. quantity cm ³ /: 25.00...29.00 1000s.: (22.00...32.00) |
| Del. quantity cm ³ / | : 78.50...79.50 | Dispersion cm ³ /: 3.5 1000s.: (3.5) |
| | 1000s.: (72.00...86.00) | 2nd speed 1/min: 480 |
| 2nd speed | 1/min: 2200 | Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Charge press. | hPa: 1000 | 3rd speed 1/min: 400 |
| Del. quantity cm ³ / | : 0.00...3.00 | Del. quantity cm ³ /: 5.00...11.00 1000s.: (3.50...12.50) |
| | 1000s.: (0.00...3.00) | |
| 3rd speed | 1/min: 2100 | |
| Charge press. | hPa: 1000 | |
| Del. quantity cm ³ / | : 12.00...28.00 | |
| | 1000s.: (10.00...30.00) | |
| 5th speed | 1/min: 2050 | Automatic starting fuel delivery: |
| Charge press. | hPa: 1000 | 1st speed 1/min: 300 |
| Del. quantity cm ³ / | : 34.00...40.00 | Del. quantity cm ³ /: 70.00...100.00 1000s.: (70.00...100.00) |
| | 1000s.: (31.00...43.00) | |
| 9th speed | 1/min: 1900 | 2nd speed 1/min: 500 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: 50.00...70.00 1000s.: (50.00...70.00) |
| Del. quantity cm ³ / | : 88.00...92.00 | |
| | 1000s.: (86.00...94.00) | |
| 12th speed | 1/min: 1500 | 4th speed 1/min: 100 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: 80.00...120.00 1000s.: (80.00...120.00) |
| Del. quantity cm ³ / | : 99.50...100.50 | |
| | 1000s.: (97.70...102.30) | |
| 14th speed | 1/min: 800 | Mounting and assembly dimensions: |
| Del. quantity cm ³ / | : 69.50...72.00 | Designation |
| | 1000s.: (67.00...74.00) | K mm: - |

| | |
|----|-----------------|
| KF | mm: K-OT |
| MS | mm: 0.6...1.0 |
| XK | mm: 21.8...23.8 |
| XL | mm: 11.2...14.6 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 53.1...60.9 |

Remarks:

:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R123-1
 Type number : 0 460 424 007
 Customer Part-No. : 390 7653

Customer-specific information
 Customer : CDC

Engine : 4 BT 390

Power KW: 93
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 461 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 016

Opening Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 2.0
 mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Setting value nm: 2.30...2.70
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
 Setting value bar: 4.50...5.10
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
 Del. quantity cm³/
 1000S.: 85.70...86.70
 Shutoff electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 18.50...24.50
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
 Del. quantity cm³/
 1000S.: 19.50...25.50
 Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 97.00...147.00
 mind 1000S.: 97.00
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 ID travel mm: 3.10...3.90
 mm: (2.80...4.20)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 900
Supply-pump pressure bar: 4.50...5.10
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Supply-pump pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1270
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
4th speed 1/min: 1200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)
5th speed 1/min: 1220
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 19.50...25.50
1000s.: (16.50...28.50)

9th speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 80.50...83.50
1000s.: (79.00...85.00)

11th speed 1/min: 750
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 85.80...89.80
1000s.: (83.80...91.80)

12th speed 1/min: 900
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 85.70...86.70
1000s.: (83.20...89.20)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 83.00...91.00
1000s.: (81.00...93.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 18.50...24.50
1000s.: (16.50...26.50)
Dispersion cm³/: 5.5
1000s.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 97.00...147.00
1000S.: (100.00...150.00)

2nd speed 1/min: 200

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 97.00...147.00
1000S.: (97.00...147.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 1.4...1.6

SVS max. mm: 3.9

XK mm: 18.8...20.8

XL mm: 13.2...16.6

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R123-10
 Type number : 0 460 424 019
 Customer Part-No. : 390 7656

Customer-specific information
 Customer : CDC

Engine : 4 BTA 3.9

Power KW: 116
 Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 016

Opening Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.7
 mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
 Setting value mm: 3.70...4.10
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 850
 Setting value bar: 5.90...6.50
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1100
 Del. quantity cm³/
 1000S.: 90.50...91.50
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 22.00...28.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340
 Del. quantity cm³/
 1000S.: 28.00...34.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³: 105.00...145.00
 mind 1000S.: 105.0
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 4.60...5.40
 mm: (4.30...5.70)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 850
 TD travel mm: 3.70...4.10
 mm: (3.20...4.60)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.60...2.40
 mm: (1.30...2.70)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 2nd speed 1/min: 850
 Supply-pump pressure bar: 5.90...6.50
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 6.70...7.30
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 Supply-pump pressure bar: 4.30...4.90
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1400
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1340
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 28.00...34.00
 1000s.: (25.00...37.00)
 8th speed 1/min: 1290
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³: 68.00...76.00
 1000s.: (66.00...78.00)
 9th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 84.50...87.50
 1000s.: (83.00...89.00)
 11th speed 1/min: 850
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 94.50...98.50
 1000s.: (92.50...100.50)
 12th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 90.50...91.50
 1000s.: (88.00...94.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 82.00...90.00
 1000s.: (80.00...92.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1250
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 22.00...28.00
 1000s.: (20.00...30.00)
 Dispersion cm³: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...4.00
 1000s.: (0.00...4.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 105.00...145.00
1000s.: (105.00...145.00)

2nd speed 1/min: 250

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 65.00...105.00
1000s.: (65.00...105.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 105.00...145.00
1000s.: (105.00...145.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 0.6...1.0

Remarks:

:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 16.07.91
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R230
 Type number : 0 460 424 026
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 77
 Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC) : +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.66
 mm: +0.02(0.06)
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.80...2.20
 AFB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press hPa: 1000
 Setting value bar: 4.70...5.30
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 69.50...70.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000s.: 36.50...37.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000s.: 8.00...14.00
 KSB/AFB valve Volt: 12

Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1500
 Charge press hPa: 1000

| | | |
|--------------------------------------|-------------------|---|
| Del. quantity cm ³ / | | Shutoff |
| 1000s.: 44.00...50.00 | | electromagnet Volt: 12 |
| KSB/AFB | | 2nd speed 1/min: 1100 |
| valve | Volt: 12 | Charge press. hPa: 1000 |
| Shutoff | | Supply-pump |
| electromagnet Volt: 12 | | pressure bar: 4.70...5.30 |
| Start: | | KSB/AFB |
| Speed | 1/min: 100 | valve |
| Det. quantity cm ³ : | 40.00...120.00 | Volt: 12 |
| mind | 1000s.: 40.00 | Shutoff |
| KSB/AFB | | electromagnet Volt: 12 |
| Valve | Volt: 12 | 4th speed 1/min: 1400 |
| Shutoff | | Charge press. hPa: 1000 |
| electromagnet Volt: 12 | | Supply-pump |
| Inspection-pump test specifications | | pressure bar: 5.90...6.50 |
| Test specifications in parentheses | | KSB/AFB |
| Timing-device characteristic: | | valve |
| 2nd speed | 1/min: 1400 | Volt: 12 |
| Charge press | hPa: 1000 | Shutoff |
| TD travel | mm: 2.90...3.70 | electromagnet Volt: 12 |
| | mm: (2.60...4.00) | Overflow : 41.70...83.40 |
| KSB/AFB | | quantity cm ³ /10s: (41.70...83.40) |
| valve | Volt: 12 | 2nd speed 1/min: 1400 |
| Shutoff | | Charge press. hPa: 1000 |
| electromagnet Volt: 12 | | KSB/AFB |
| 3rd speed | 1/min: 1100 | valve |
| Charge press | hPa: 1000 | Volt: 12 |
| TD travel | mm: 1.80...2.20 | Shutoff |
| | mm: (1.30...2.70) | electromagnet Volt: 12 |
| KSB/AFB | | Overflow : 55.60...139.00 |
| valve | Volt: 12 | quantity cm ³ /10s: (55.60...139.00) |
| Shutoff | | Delivery-quant. and breakaway char.: |
| electromagnet Volt: 12 | | 1nd speed 1/min: 700 |
| 4th speed | 1/min: 900 | Charge-air pressure-setting |
| Charge press | hPa: 1000 | point hPa: 400 |
| TD travel | mm: 0.30...1.10 | LDA-stroke mm: 6.0 |
| | mm: (0.00...1.40) | KSB/AFB |
| KSB/AFB | | valve |
| valve | Volt: 12 | Volt: 12 |
| Shutoff | | Shutoff |
| electromagnet Volt: 12 | | electromagnet Volt: 12 |
| TD travel | mm: 0.00...6.40 | Del. quantity cm ³ /: 67.00...68.00 |
| | mm: (0.00...1.00) | 1000s.: (63.50...71.50) |
| Shutoff | | 2nd speed 1/min: 1650 |
| electromagnet Volt: 12 | | Charge press. hPa: 1000 |
| Supply-pump pressure characteristic: | | KSB/AFB |
| 1st speed | 1/min: 500 | valve |
| Charge press. | hPa: 1000 | Volt: 12 |
| Supply-pump | | Shutoff |
| pressure | bar: 2.10...2.70 | electromagnet Volt: 12 |
| KSB/AFB | | Del. quantity cm ³ /: 0.00...3.00 |
| valve | Volt: 12 | 1000s.: (0.00...3.00) |
| | | 5th speed 1/min: 1500 |
| | | Charge press. hPa: 1000 |

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 54.00...60.00
 1000S.: (51.00...63.00)
 6th speed 1/min: 1590
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 15.00...55.00
 1000S.: (15.00...55.00)
 9th speed 1/min: 1400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 64.50...67.50
 1000S.: (63.00...69.00)
 12th speed 1/min: 900
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 69.50...70.50
 1000S.: (67.00...73.00)
 18th speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.50...37.50
 1000S.: (33.00...41.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 73.50...81.50
 1000S.: -
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)
 KSB/AFB
 valve Volt: 12
 Idle delivery:
 1st speed 1/min: 375
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm³: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...4.00
 1000S.: (0.00...4.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 150
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 02
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...120.00
 1000S.: (40.00...120.00)
 2nd speed 1/min: 380
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...40.00
 1000S.: (0.00...40.00)
 4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...120.00
 1000S.: (40.00...120.00)
 Shutoff electromagnet:
 Cut-in min voltage : 10.0
 Rated voltage : 12.0
 Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 0.9...1.2 |
| SVS max. | mm: 3.8 |
| LDA stroke | mm: 6.0 |
| XK | mm: 18.8...20.8 |
| XL | mm: 9.8...13.2 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 38.3...43.7 |

Remarks:

: C.D.C. # 390 8182

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines; only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 11.06.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R?39
Type number : 0 460 424 030
Customer Part-No. : 391 1811

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 AUTO

Power KW: 88
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.95
mm: +0.02(0.06)
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.10...2.50
Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 76.00...77.00
Shutoff electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 56.00...57.00
Shutoff electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 10.00...12.00
Shutoff electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1360
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 60.00...66.00
Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...140.00
mind 1000S.: 70.00
Shutoff electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.60...3.40
mm: (2.30...3.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.00...3.60
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.60...5.20

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20
Shutoff
electromagnet Volt: 24
4th speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1250

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 72.00...73.00
1000S.: (68.50...76.50)
2nd speed 1/min: 1550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1470
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1360
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...66.00
1000S.: (57.00...69.00)
9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 73.50...76.50
1000S.: (72.00...78.00)
10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 75.50...78.50
1000S.: (73.50...80.50)
12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 76.00...77.00
1000S.: (73.50...79.50)
18th speed 1/min: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 56.00...57.00
1000s.: (52.50...60.50)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 89.50...99.50
1000s.: -

Mech. shutoff:
Mech. Abstellung:
1st speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:
1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:
1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 10.00...12.00
1000s.: (6.00...16.00)
Dispersion cm³/: 5.5
1000s.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:
1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.00...160.00
1000s.: (90.00...160.00)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...90.00
1000s.: (50.00...90.00)
4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...140.00
1000s.: (70.00...140.00)

Shutoff electromagnet:
Cut-in
min voltage : 20.0
Rated voltage : 24.0
Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
SVS max. mm: 2.0
Ya mm: 34.8...38.8
Yb mm: 38.0...43.4

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 15.06.92
replaces : 08.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R280
Type number : 0 460 424 037

Customer-specific information
Customer : PERKINS

Engine : T4.40 LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 950
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 950
Charge press. hPa: 1000
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 93.00...94.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 84.50...85.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 22.00...26.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1430
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
mind 1000S.: 95.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

| | | | |
|--------------------------------------|-------------------|---|-------------|
| 1st speed | 1/min: 1300 | Shutoff | |
| Charge press | hPa: 1000 | electromagnet Volt: 12 | |
| TD travel | mm: 2.00...2.80 | Del. quantity cm ³ : 89.00...90.00 | |
| | mm: (1.70...3.10) | 1000s.: (86.50...92.50) | |
| electromagnet | Volt: 12 | 2nd speed | 1/min: 1560 |
| 2nd speed | 1/min: 950 | Charge press. | hPa: 1000 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 1.80...2.20 | electromagnet Volt: 12 | |
| | mm: 1.30...2.70 | Del. quantity cm ³ : 0.00...3.00 | |
| Shutoff | | 1000s.: (0.00...3.00) | |
| electromagnet | Volt: 12 | 3rd speed | 1/min: 1500 |
| 3rd speed | 1/min: 500 | Charge press. | hPa: 1000 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 0.60...1.40 | electromagnet Volt: 12 | |
| | mm: 0.30...1.70 | Del. quantity cm ³ : 14.00...22.00 | |
| Shutoff | | 1000s.: (11.00...25.00) | |
| electromagnet | Volt: 12 | 4th speed | 1/min: 1430 |
| Supply-pump pressure characteristic: | | Charge press. | hPa: 1000 |
| 1st speed | 1/min: 1300 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: 12 | |
| Supply-pump | | Del. quantity cm ³ : 47.00...53.00 | |
| pressure | bar: 6.00...6.60 | 1000s.: (44.00...56.00) | |
| Shutoff | | 5th speed | 1/min: 1300 |
| electromagnet | Volt: 12 | Charge press. | hPa: 1000 |
| 2nd speed | 1/min: 950 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: 12 | |
| Supply-pump | | Del. quantity cm ³ : 87.70...91.30 | |
| pressure | bar: 1.80...2.20 | 1000s.: (86.50...92.50) | |
| Shutoff | | 6th speed | 1/min: 1000 |
| electromagnet | Volt: 12 | Charge press. | hPa: 1000 |
| 3rd speed | 1/min: 850 | Shutoff | |
| Supply-pump | | electromagnet Volt: 12 | |
| pressure | bar: 0.60...1.40 | Del. quantity cm ³ : 93.00...94.00 | |
| Shutoff | | 1000s.: (90.50...96.50) | |
| electromagnet | Volt: 12 | 7th speed | 1/min: 700 |
| Overflow quantity at overflow valve: | | Shutoff | |
| 1st speed | 1/min: 500 | electromagnet Volt: 12 | |
| Shutoff | | Del. quantity cm ³ : 84.50...85.50 | |
| electromagnet | Volt: 12 | 1000s.: (82.00...88.00) | |
| Overflow | : 41.70...83.40 | 8th speed | 1/min: 700 |
| quantity cm ³ /10s: | (41.70...83.40) | Charge press. | hPa: 1000 |
| 2nd speed | 1/min: 1300 | Shutoff | |
| Charge press. | hPa: 1000 | electromagnet Volt: 12 | |
| Shutoff | | Del. quantity cm ³ : 92.00...96.00 | |
| electromagnet | Volt: 12 | 1000s.: (91.00...97.00) | |
| Overflow | : 55.50...139.00 | 9th speed | 1/min: 500 |
| quantity cm ³ /10s: | (55.50...139.00) | Shutoff | |
| Delivery-quant. and breakaway char.: | | electromagnet Volt: 12 | |
| 1nd speed | 1/min: 700 | Del. quantity cm ³ : 75.50...79.50 | |
| Charge-air pressure-setting | | 1000s.: (74.50...80.50) | |
| point | hPa: 300 | Mech. shutoff: | |
| LDA-stroke | mm: 7.0 | Mech. Abstellung: | |
| | | 1st speed | 1/min: 1300 |
| | | Charge press. | hPa: 1000 |
| | | Del. quantity cm ³ : 0.00...3.00 | |
| | | 1000s.: (0.00...3.00) | |
| | | Shutoff | |
| | | electromagnet volt: 12 | |

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Yb mm: 47.2...55.6

* Correction at adjusting nut (46)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 22.00...26.00
1000S.: (19.00...29.00)
Dispersion cm³: 5.0
1000S.: (5.0)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 9.00...15.00
1000S.: (7.00...17.00)
3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 95.00...145.00
1000S.: (95.00...145.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 62.00...72.00
1000S.: (62.00...72.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 95.00...145.00
1000S.: (95.00...145.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: K-OT |
| MS | mm: 1.1...1.5 |
| Ya | mm: 37.2...39.2 |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
 Edition : 10.06.92
 replaces : 12.07.89
 Calibrating oil : ISO-4113
 Injection pump : VE4/12F1100R226-7
 Type number : 0 460 424 046
 Customer Part-No. :

Customer-specific information
 Customer : CASE

Engine : 4 BT-390 580K

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.8
 mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Setting value mm: 2.30...2.70
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
 Setting value bar: 4.10...4.70
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000S.: 63.50...64.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 475
 Del. quantity cm³/
 1000S.: 6.00...12.00
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
 Del. quantity cm³/
 1000S.: 31.50...38.50
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...120.00
 mind 1000S.: 70.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 3.10...3.90
 mm: (2.80...4.20)

Shutoff electromagnet Volt: 12

3rd speed 1/min: 900

| | | |
|--|--|--|
| TD travel | mm: 2.30...2.70 mm: (1.80...3.20) | Shutoff electromagnet Volt: 12 9th speed 1/min: 1100 |
| Shutoff electromagnet Volt: 12 4th speed 1/min: 650 | TD travel mm: 0.70...1.50 mm: (0.40...1.80) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 60.50...63.50 1000S.: (59.00...65.00) |
| TD travel mm: 0.70...1.50 mm: (0.40...1.80) | Shutoff electromagnet Volt: 12 | 10th speed 1/min: 900 |
| Shutoff electromagnet Volt: 12 | Supply-pump pressure characteristic: | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 60.80...63.80 1000S.: (58.80...65.80) |
| 1st speed 1/min: 500 | Supply-pump pressure bar: 2.40...3.00 | 12th speed 1/min: 750 |
| Supply-pump pressure bar: 2.40...3.00 | Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 63.50...64.50 1000S.: (61.00...67.00) |
| Shutoff electromagnet Volt: 12 | 2nd speed 1/min: 900 | 20th speed 1/min: 500 |
| 2nd speed 1/min: 900 | Supply-pump pressure bar: 4.10...4.70 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 61.00...69.00 1000S.: (59.00...71.00) |
| Supply-pump pressure bar: 4.10...4.70 | Shutoff electromagnet Volt: 12 | Mech. shutoff: Mech. Abstellung: |
| Shutoff electromagnet Volt: 12 | 3rd speed 1/min: 1100 | 1st speed 1/min: 1100 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) |
| 3rd speed 1/min: 1100 | Supply-pump pressure bar: 4.90...5.50 | Shutoff electromagnet volt: 12 |
| Supply-pump pressure bar: 4.90...5.50 | Shutoff electromagnet Volt: 12 | Electr. shutoff: |
| Shutoff electromagnet Volt: 12 | Overflow : 41.70...83.40 quantity cm ³ /10s: (41.70...83.40) | 1st speed 1/min: 475 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) |
| Overflow : 41.70...83.40 quantity cm ³ /10s: (41.70...83.40) | 2nd speed 1/min: 1100 | Idle delivery: |
| 2nd speed 1/min: 1100 | Shutoff electromagnet Volt: 12 | 1st speed 1/min: 475 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 6.00...12.00 1000S.: (4.00...14.00) |
| Shutoff electromagnet Volt: 12 | Overflow : 55.60...139.00 quantity cm ³ /10s: (55.60...139.00) | Dispersion cm ³ /: 5.5 1000S.: (7.0) |
| Overflow : 55.60...139.00 quantity cm ³ /10s: (55.60...139.00) | Delivery-quant. and breakaway char.: | 2nd speed 1/min: 550 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 0.00...4.00 1000S.: (0.00...4.00) |
| Delivery-quant. and breakaway char.: | 2nd speed 1/min: 1250 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 10.00...40.00 1000S.: (10.00...40.00) |
| 2nd speed 1/min: 1250 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 10.00...40.00 1000S.: (10.00...40.00) |
| Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 0.00...3.00 1000S.: (0.00...3.00) | 3rd speed 1/min: 1180 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 10.00...40.00 1000S.: (10.00...40.00) |
| 3rd speed 1/min: 1180 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 10.00...40.00 1000S.: (10.00...40.00) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 31.50...38.50 1000S.: (29.00...41.00) |
| Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 10.00...40.00 1000S.: (10.00...40.00) | 5th speed 1/min: 1160 | Automatic starting fuel delivery: |
| 5th speed 1/min: 1160 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 31.50...38.50 1000S.: (29.00...41.00) | 1st speed 1/min: 130 Shutoff electromagnet Volt: 12 |

Del. quantity cm³/: 70.00...130.00
1000s.: (70.00...130.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 1.1...1.5

SVS max. mm: 3.2

Ya mm: 34.8...38.8

Yb mm: 40.2...45.6

Remarks:

: CASE # 391 4487

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 11.06.92
 replaces : 16.05.89
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1400R239-2
 Type number : 0 460 424 051
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 4 BTA 3.9 AUTO

Power KW: 88
 Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.95
 mm: +0.02(0.06)

Outlet : A

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 2.20...2.60
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 86.00...87.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 4.0
 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000s.: 58.50...59.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000s.: 4.00...6.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.5
 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 61.50...67.50
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 70.00...140.00
mind 1000s.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.80...3.60
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12
Overflow : 69.50...111.20
quantity cm³/10s: (69.50...111.20)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 83.40...180.70
quantity cm³/10s: (83.40...180.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 330
LDA-stroke mm: 7.2
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.00...73.00
1000s.: (68.50...76.50)

2nd speed 1/min: 1640
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1600
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...15.00
1000s.: (0.00...15.00)

4th speed 1/min: 1560
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)

5th speed 1/min: 1480
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 61.50...67.50
1000s.: (58.50...70.50)

9th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 73.00...76.00
1000s.: (71.50...77.50)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 79.00...82.00
1000s.: (77.00...84.00)

12th speed 1/min: 750
Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 86.00...87.00
 1000S.: (83.50...89.50)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 58.50...59.50
 1000S.: (55.00...63.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 98.00...108.00
 1000S.: -

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.00...6.00
 1000S.: (0.00...10.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...150.00
 1000S.: (80.00...150.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...140.00
 1000S.: (70.00...140.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|------------|-----------------|
| K | mm: - |
| KF | mm: K-OT |
| MS | mm: 1.0...1.4 |
| SVS max. | mm: 2.2 |
| LDA stroke | mm: 7.2 |
| KK | mm: 21.8...23.8 |
| XL | mm: 11.5...14.9 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 41.7...47.1 |

Remarks:

Overflow restriction 0.75 mm - Part No.
..343...344 :

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 03.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R374
Type number : 0 460 424 057
Customer Part-No. : 391 7539

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND

Power KW: 93
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.55
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 101.00...102.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 84.50...85.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1130
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 61.00...67.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...130.00
mind 1000S.: 60.00

| | |
|---|---|
| Shutoff electromagnet Volt: 12 | Overflow quantity : 55.60...139.00 cm3/10s: (40.60...153.00) |
| Inspection-pump test specifications Test specifications in parentheses | Delivery-quant. and breakaway char.: |
| Timing-device characteristic: | |
| 2nd speed 1/min: 1100 Charge press hPa: 1000 TD travel mm: 4.90...5.70 mm: (4.60...6.00) | 1nd speed 1/min: 700* Charge-air pressure-setting point hPa: 350 LDA-stroke mm: 6.6 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 94.50...95.50 1000s.: (91.00...99.00) |
| 3rd speed 1/min: 850 Charge press hPa: 1000 TD travel mm: 4.00...4.40 mm: (3.50...4.90) | 2nd speed 1/min: 1240 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...15.00 1000s.: (0.00...15.00) |
| Shutoff electromagnet Volt: 12 4th speed 1/min: 500 Charge press hPa: 1000 TD travel mm: 1.80...2.60 mm: (1.50...2.90) | 4th speed 1/min: 1200 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.00...55.00 1000s.: (15.00...55.00) |
| Shutoff electromagnet Volt: 12 | 5th speed 1/min: 1'100 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 90.00...93.00 1000s.: (88.50...94.50) |
| Supply-pump pressure characteristic: | 9th speed 1/min: 500 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 110.50...120.50 1000s.: (109.50...121.50) |
| 1st speed 1/min: 500 Charge press. hPa: 1000 Supply-pump pressure bar: 4.00...4.60 Shutoff electromagnet Volt: 12 2nd speed 1/min: 850 Charge press. hPa: 1000 Supply-pump pressure bar: 5.60...6.20 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump pressure bar: 6.70...7.30 Shutoff electromagnet Volt: 12 | 10th speed 1/min: 500 Charge press. hPa: - Shutoff electromagnet Volt: 12 Del. quantity cm3/: 84.50...85.50 1000s.: (81.00...89.00) 12th speed 1/min: 850 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quynity cm3/: 101.00...102.00 1000s.: (98.50...104.50) |
| Overflow quantity at overflow valve: | Mech. shutoff: Mech. Abstellung: |
| 1st speed 1/min: 500 Charge press. hPa: - Shutoff electromagnet Volt: 12 Overflow : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1250 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 | 1st speed 1/min: 1250 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 |

Electr. shutoff:

1st speed 1/min: 375
Charge press. kPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Remarks:

:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...140.00
1000S.: (70.00...140.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
SVS max. mm: 2.4
LDA stroke mm: 6.6

BOSCH INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 03.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R373-2
 Type number : 0 460 424 060
 Customer Part-No. : 391 7030

Customer-specific information
 Customer : CDC

Engine : 4 BT 3.9 IND.

Power KW: 63
 Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.8
 mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Setting value mm: 2.00...2.40
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
 Setting value bar: 4.60...5.20
 Shutoff electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1100
 Del. quantity cm³/
 1000S.: 57.50...58.50
 Shutoff electromagnet Volt: 24
 Dispersion cm³: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 335
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
 Del. quantity cm³/
 1000S.: 40.00...46.00
 Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³: 70.00...120.00
 mind 1000S.: 70.00
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 2.90...3.70
 mm: (2.60...4.00)
 Shutoff electromagnet Volt: 24

| | | | |
|--------------------------------------|-------------------------|-----------------------------------|--|
| 3rd speed | 1/min: 900 | 9th speed | 1/min: 1250 |
| TD travel | mm: 2.00...2.40 | Shutoff | electromagnet Volt: 24 |
| | mm: (1.50...2.90) | Del. quantity cm ³ : | 55.50...58.50 1000S.: (54.00...60.00) |
| Shutoff | electromagnet Volt: 24 | 11th speed | 1/min: 750 |
| 4th speed | 1/min: 750 | Shutoff | electromagnet Volt: 24 |
| TD travel | mm: 0.80...1.60 | Del. quantity cm ³ : | 55.50...59.50 1000S.: (53.50...61.50) |
| | mm: (0.50...1.90) | 12th speed | 1/min: 1100 |
| Shutoff | electromagnet Volt: 24 | Shutoff | electromagnet Volt: 24 |
| Supply-pump pressure characteristic: | | Del. quantity cm ³ : | 57.50...58.50 1000S.: (55.00...61.00) |
| 1st speed | 1/min: 500 | 20th speed | 1/min: 500 |
| Supply-pump pressure | bar: 2.70...3.30 | Shutoff | electromagnet Volt: 24 |
| Shutoff | electromagnet Volt: 24 | Del. quantity cm ³ : | 49.00...57.00 1000S.: (47.00...59.00) |
| 2nd speed | 1/min: 900 | Mech. shutoff: | |
| Supply-pump pressure | bar: 4.60...5.20 | Mech. Abstellung: | |
| Shutoff | electromagnet Volt: 24 | 1st speed | 1/min: 1250 |
| 3rd speed | 1/min: 1100 | Del. quantity cm ³ : | 0.00...3.00 1000S.: (0.00...3.00) |
| Supply-pump pressure | bar: 5.40...6.00 | Shutoff | electromagnet volt: 24 |
| Shutoff | electromagnet Volt: 24 | Electr. shutoff: | |
| Overflow quantity at overflow valve: | | 1st speed | 1/min: 335 |
| 1st speed | 1/min: 500 | Del. quantity cm ³ : | 0.00...3.00 1000S.: (0.00...3.00) |
| Shutoff | electromagnet Volt: 12 | Shutoff | electromagnet volt: - |
| Overflow | : 41.70...83.40 | Idle delivery: | |
| quantity cm ³ /10s: | (26.70...98.40) | 1st speed | 1/min: 335 |
| 2nd speed | 1/min: 1250 | Shutoff | electromagnet Volt: 24 |
| Shutoff | electromagnet Volt: 12 | Del. quantity cm ³ : | 8.00...14.00 1000S.: (6.00...16.00) |
| Overflow | : 55.60...139.00 | Dispersion | cm ³ : 5.5 1000S.: (7.0) |
| quantity cm ³ /10s: | (40.60...153.00) | 2nd speed | 1/min: 500 |
| Delivery-quant. and breakaway char.: | | Shutoff | electromagnet Volt: 24 |
| 2nd speed | 1/min: 1370 | Del. quantity cm ³ : | 0.00...4.00 1000S.: (0.00...4.00) |
| Shutoff | electromagnet Volt: 24 | Automatic starting fuel delivery: | |
| Del. quantity cm ³ : | 0.00...15.00 | 1st speed | 1/min: 130 |
| | 1000S.: (0.00...15.00) | Shutoff | electromagnet Volt: 24 |
| 4th speed | 1/min: 1330 | Del. quantity cm ³ : | 75.00...125.00 1000S.: (75.00...125.00) |
| Shutoff | electromagnet Volt: 24 | | |
| Del. quantity cm ³ : | 15.00...55.00 | | |
| | 1000S.: (15.00...55.00) | | |
| 5th speed | 1/min: 1300 | | |
| Shutoff | electromagnet Volt: 24 | | |
| Del. quantity cm ³ : | 40.00...46.00 | | |
| | 1000S.: (37.00...49.00) | | |

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

| Designation | |
|-------------|---------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 0.9...1.1 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R374-1
 Type number : 0 460 424 063
 Customer Part-No. : 391 7020

Customer-specific information
 Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 84
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.55
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
 Charge press. hPa: 1000
 Setting value mm: 4.00...4.40
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
 Charge press hPa: 1000
 Setting value bar: 5.60...6.20
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 84.50...85.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 63.50...64.50
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 77.50...80.50
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...130.00
 mind 1000S.: 60.00

| | |
|---|---|
| Shutoff electromagnet Volt: 12 | Overflow quantity : 55.60...139.00 cm3/10s: (40.60...153.00) |
| Inspection-pump test specifications Test specifications in parentheses | |
| Timing-device characteristic: | |
| | |
| 2nd speed 1/min: 1150 | 1nd speed 1/min: 700* |
| Charge press hPa: 1000 | Charge-air pressure-setting point hPa: 350 |
| TD travel mm: 5.20...6.00 | LDA-stroke mm: 6.6 |
| | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| 3rd speed 1/min: 850 | Del. quantity cm3/: 84.50...85.50 1000s.: (82.00...88.00) |
| Charge press hPa: 1000 | 2nd speed 1/min: 1300 |
| TD travel mm: 4.00...4.40 | Charge press. hPa: 1000 |
| | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| 4th speed 1/min: 500 | Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) |
| Charge press hPa: 1000 | 3rd speed 1/min: 1220 |
| TD travel mm: 1.80...2.60 | Charge press. hPa: 1000 |
| | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| 5th speed 1/min: 1170 | Del. quantity cm3/: 15.00...55.00 1000s.: (15.00...55.00) |
| Charge press. hPa: 1000 | Shutoff |
| Shutoff | electromagnet Volt: 12 |
| electromagnet Volt: 12 | Del. quantity cm3/: 63.00...69.00 1000s.: (60.00...72.00) |
| Supply-pump pressure characteristic: | 9th speed 1/min: 1100 |
| 1st speed 1/min: 500 | Charge press. hPa: 1000 |
| Charge press. hPa: 1000 | Shutoff |
| Supply-pump pressure bar: 4.00...4.60 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm3/: 77.50...80.50 1000s.: (76.00...82.00) |
| electromagnet Volt: 12 | 10th speed 1/min: 1000 |
| 2nd speed 1/min: 850 | Charge press. hPa: 1000 |
| Charge press. hPa: 1000 | Shutoff |
| Supply-pump pressure bar: 5.60...6.20 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm3/: 79.50...82.50 1000s.: (77.50...84.50) |
| electromagnet Volt: 12 | 12th speed 1/min: 850 |
| 3rd speed 1/min: 1150 | Charge press. hPa: 1000 |
| Charge press. hPa: 1000 | Shutoff |
| Supply-pump pressure bar: 6.90...7.50 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm3/: 84.50...85.50 1000s.: (82.00...88.00) |
| electromagnet Volt: 12 | 18th speed 1/min: 500 |
| Overflow : 41.70...83.40 | Shutoff |
| quantity cm3/10s: (26.70...98.40) | electromagnet Volt: 12 |
| 2nd speed 1/min: 1150 | Del. quantity cm3/: 63.50...64.50 1000s.: (60.00...68.00) |
| Charge press. hPa: 1000 | Mech. shutoff: |
| Shutoff | Mech. Abstellung: |
| electromagnet Volt: 12 | 1st speed 1/min: 1100 |

| | | |
|---|------------|---|
| Charge press. hPa: 1000 | KF | mm: 5.0...5.4 |
| Del. quantity cm ³ /: 0.00...3.00 | MS | mm: 1.0...1.4 |
| 1000S.: (0.00...3.00) | LDA stroke | mm: 6.6 |
| Shutoff electromagnet volt: 12 | Remarks: | : |
| Electr. shutoff: | | |
| 1st speed 1/min: 375 | | Operate control lever after each manifold-pressure compensator pressure change. |
| Charge press. hPa: - | | |
| Del. quantity cm ³ /: 0.00...3.00 | | * Correction at adjusting nut (46) |
| 1000S.: (0.00...3.00) | | |
| Shutoff electromagnet volt: - | | |
| Idle delivery: | | |
| 1st speed 1/min: 375 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 8.00...14.00 | | |
| 1000S.: (6.00...16.00) | | |
| Dispersion cm ³ /: 5.5 | | |
| 1000S.: (7.0) | | |
| 2nd speed 1/min: 450 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 0.00...4.00 | | |
| 1000S.: (0.00...4.00) | | |
| Automatic starting fuel delivery: | | |
| 1st speed 1/min: 130 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 60.00...130.00 | | |
| 1000S.: (60.00...130.00) | | |
| 2nd speed 1/min: 230 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 20.00...60.00 | | |
| 1000S.: (20.00...60.00) | | |
| 4th speed 1/min: 100 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 60.00...130.00 | | |
| 1000S.: (60.00...130.00) | | |
| Shutoff electromagnet: | | |
| Cut-in min voltage : 10.0 | | |
| Rated voltage : 12.0 | | |
| Mounting and assembly dimensions: | | |
| Designation K mm: - | | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1150R374-1
 Type number : 0 460 424 063
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 112
 Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.55
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
 Charge press. hPa: 1000
 Setting value mm: 4.00...4.40
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
 Charge press. hPa: 1000
 Setting value bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 84.50...85.50

Shutoff
 electromagnet Volt: 12
 Dispersion cm³/ : 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 63.50...64.50

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 62.50...68.50

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 60.00...130.00
wind 1000s.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1150
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 6.6
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 79.50...80.50
1000s.: (76.00...84.00)

2nd speed 1/min: 1320
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1260
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)

5th speed 1/min: 1220
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 62.50...68.50
1000s.: (59.50...71.50)

9th speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 76.00...79.00
1000s.: (74.50...80.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 79.50...82.50
1000s.: (77.50...84.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 85.50...86.50
1000s.: (83.00...89.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 63.50...64.50
1000s.: (60.00...68.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|------------|---------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 1.0...1.4 |
| LDA stroke | mm: 6.6 |

Remarks:

: C.D.C # 391 7519
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM
 Edition : 16.06.92
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1400R477
 Type number : 0 460 424 088

Customer-specific information
 Customer : MWM

Engine : TD-229 EC4 F-1000 T

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 800
 Setting value mm: 2.80...3.20
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 800
 Setting value bar: 6.00...6.60
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 119.00...120.00

Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 89.00...93.00

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 17.00...21.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.5
 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1500
 Charge press hPa: 800
 Del. quantity cm³/
 1000S.: 95.00...101.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 130.00...180.00
 mind 1000S.: 130.0
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300
 Charge press hPa: 800
 TD travel mm: 4.50...5.30
 mm: (4.20...5.60)
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Charge press hPa: 800
 TD travel mm: 2.80...3.20
 mm: (2.30...3.70)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Charge press hPa: 800
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)

Supply-pump pressure characteristic:

1st speed 1/min: 1300
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 7.10...7.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 6.00...6.60
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 5.10...5.70
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...139.00
 quantity cm³/10s: (82.30...154.00)
 2nd speed 1/min: 1300
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 111.10...194.40
 quantity cm³/10s: (96.00...209.40)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 109.00...113.00
 1000S.: (106.50...115.50)
 2nd speed 1/min: 1650
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 36.00...52.00
 1000S.: (32.00...56.00)
 3rd speed 1/min: 1500
 Charge press. hPa: 800

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 95.00...101.00
 1000S.: (92.00...104.00)
 4th speed 1/min: 1300
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 121.00...125.00
 1000S.: (119.50...126.50)
 5th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 119.00...120.00
 1000S.: (116.50...122.50)
 6th speed 1/min: 800
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 121.00...127.00
 1000S.: (119.00...129.00)
 7th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 89.00...93.00
 1000S.: (86.50...95.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.00...21.00
 1000S.: (15.00...23.00)
 Dispersion cm³: 3.5
 1000S.: (5.0)
 2nd speed 1/min: 380
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 8.00...16.00
 1000S.: (6.00...18.00)
 3rd speed 1/min: 470
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...6.00
 1000S.: (0.00...6.00)

Automatic starting fuel delivery:

1st speed 1/min: 250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...100.00
1000s.: (50.00...100.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 130.00...180.00
1000s.: (130.00...180.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.6...3.8 |
| KF | mm: K-OT |
| Ya | mm: 42.0...44.0 |
| Yb | mm: 33.8...42.2 |

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM
 Edition : 16.06.92
 Calibrating oil : ISO-4113

Injection pump : VE4/12F1500P492
 Type number : 0 460 424 091

Customer-specific information
 Customer : MWM

Engine : D 229 EC 4

TEST BENCH REQUIREMENTS

Calibrating oil:
 return temp. °C

with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Setting value mm: 4.20...4.60
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Setting value bar: 6.20...6.80
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100

Del. quantity cm³/
 1000s.: 84.50...85.50

Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 4.0
 1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000s.: 13.00...17.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 3.5
 1000s.: (5.0)

Full-load speed regulation

Speed 1/min: 1600
 Del. quantity cm³/
 1000s.: 54.00...60.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³: 100.00...140.00
 mind 1000s.: 100.0

Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1500
 TD travel mm: 6.30...7.10
 mm: (6.00...7.40)

Shutoff : 12
 2nd speed 1/min: 1100
 TD travel mm: 4.20...4.60
 mm: (3.70...5.10)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 900
 TD travel mm: 2.30...3.10
 mm: (2.00...3.40)

Supply-pump pressure characteristic:

1st speed 1/min: 1500
 Supply-pump
 pressure bar: 7.80...8.40
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100

Supply-pump
pressure bar: 6.20...6.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
Supply-pump
pressure bar: 5.40...6.00

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...42.00
1000s.: (25.00...45.00)
3rd speed 1/min: 1600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 54.00...60.00
1000s.: (51.00...63.00)
4th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...79.00
1000s.: (73.50...80.50)
5th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.50...85.50
1000s.: (82.00...88.00)
6th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 88.00...92.00
1000s.: (86.50...93.50)
7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.00...72.00
1000s.: (64.00...74.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375

Det. quantity cm³/: 13.00...17.00
1000s.: (11.00...19.00)
Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000s.: (11.00...19.00)
Dispersion cm³/: 3.5
1000s.: (5.0)
2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 38.50...46.50
1000s.: (36.50...48.50)
3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)
4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...140.00
1000s.: (100.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Ya mm: 42.0...44.0
Yb mm: 36.8...45.2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 01.06.92
 replaces : 03.85
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1300L21-2
 Type number : 0 460 426 013
 Customer Part-No. :

Customer-specific information:
 Customer : PERKINS

Engine : T6.354.4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.45
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 600
 Charge press. hPa: 1000
 Setting value mm: 2.50...2.90

Supply-pump pressure

Speed 1/min: 600
 Charge press. hPa: 1000
 Setting value bar: 3.80...4.40

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 92.50...93.50
 Dispersion cm³/: 5.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 68.50...72.50

Low-idle speed regulation

Speed 1/min: 270
 Del. quantity cm³/
 1000S.: 8.00...12.00
 Del. quantity cm³/: 5.0
 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 42.00...50.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: -
 mind 1000S.: 78.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | |
|---------------|-------------------|
| 3rd speed | 1/min: 600 |
| Charge press. | hPa: 1000 |
| TD travel | mm: 2.50...2.90 |
| | mm: (2.00...3.40) |
| 4th speed | 1/min: 400 |
| Charge press. | hPa: 1000 |
| TD travel | mm: 0.70...1.50 |
| | mm: (0.40...1.80) |
| 5th speed | 1/min: 800 |
| Charge press. | hPa: 1000 |
| TD travel | mm: 3.80...4.60 |
| | mm: (3.50...4.90) |

| | |
|---|---|
| Supply-pump pressure characteristic: | |
| 1st speed 1/min: 1300 | 1st speed 1/min: 1300 |
| Charge press. hPa: 1000 | Del. quantity cm ³ /: 0.00...3.00 |
| Supply-pump | 1000s.: (0.00...3.00) |
| pressure bar: 6.00...6.60 | |
| 2nd speed 1/min: 600 | Idle delivery: |
| Charge press. hPa: 1000 | 1st speed 1/min: 270 |
| Supply-pump | Del. quantity cm ³ /: 8.00...12.00 |
| pressure bar: 3.80...4.40 | 1000s.: (5.00...15.00) |
| 3rd speed 1/min: 400 | Dispersion cm ³ /: 3.5 |
| Charge press. hPa: 1000 | 1000s.: - |
| Supply-pump | 2nd speed 1/min: 400 |
| pressure bar: 3.00...3.60 | Del. quantity cm ³ /: 0.00...1.00 |
| Overflow quantity at overflow valve: | 1000s.: (0.00...1.00) |
| 1st speed 1/min: 500 | 3rd speed 1/min: 320 |
| Overflow : 41.70...83.40 | Del. quantity cm ³ /: 1.00... |
| quantity cm ³ /10s: (26.70...98.40) | 1000s.: - |
| 2nd speed 1/min: 1300 | Automatic starting fuel delivery: |
| Charge press. hPa: 1000 | 1st speed 1/min: 130 |
| Overflow : 55.60...139.00 | Del. quantity cm ³ /: 78.00... |
| quantity cm ³ /10s: (40.60...154.00) | 1000s.: - |
| Delivery-quant. and breakaway char.: | 2nd speed 1/min: 230 |
| 1nd speed 1/min: 700 | Del. quantity cm ³ /: ...75.00 |
| Charge-air pressure-setting | 1000s.: - |
| point hPa: 320 | 4th speed 1/min: 100 |
| LDA-stroke mm: 4.5 | Del. quantity cm ³ /: 78.00... |
| Del. quantity cm ³ /: 84.50...88.50 | 1000s.: - |
| 1000s.: (82.80...90.20) | Mounting and assembly dimensions: |
| 2nd speed 1/min: 1600 | KF mm: 5.1-5.4 |
| Charge press. hPa: 1000 | MS mm: 0.9-1.1 |
| Del. quantity cm ³ /: 0.00...3.00 | SVS max. mm: 6.0 |
| 1000s.: (0.00...3.00) | XK mm: 20.2-22.2 |
| 5th speed 1/min: 1480 | XL mm: 12.5-15.8 |
| Charge press. hPa: 1000 | Ya mm: 37.2-39.2 |
| Del. quantity cm ³ /: 42.00...50.00 | Yb mm: 52.7-60.7 |
| 1000s.: (41.00...51.00) | |
| 9th speed 1/min: 1300 | Remarks: |
| Charge press. hPa: 1000 | : |
| Del. quantity cm ³ /: 85.50...88.50 | : |
| 1000s.: (84.00...90.00) | |
| 12th speed 1/min: 1000 | |
| Charge press. hPa: 1000 | |
| Del. quynity cm ³ /: 92.50...93.50 | |
| 1000s.: (90.00...96.00) | |
| 16th speed 1/min: 1000 | |
| Del. quantity cm ³ /: 78.50...82.50 | |
| 1000H.: (77.50...83.50) | |
| 18th speed 1/min: 500 | |
| Del. quantity cm ³ /: 68.50...72.50 | |
| 1000s.: (67.50...73.50) | |
| Mech. shutoff: | |
| Mech. Abstellung: | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 03.06.92
 replaces : 02.84
 Calibrating oil : ISO4113

Injection pump : VE6/12F140CR132
 Type number : 0 460 426 032

Customer-specific information
 Customer : MAN

Engine : D 0226 MKF LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
 Charge press. hPa: 1000
 Setting value mm: 3.10...3.50

Supply-pump pressure

Speed 1/min: 800
 Charge press. hPa: 1000
 Setting value bar: 5.10...5.70

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 117.50...118.50
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 630
 Del. quantity cm³/
 1000S.: 73.50...74.50

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 10.00...16.00
 Del. quantity cm³/: 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1450
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 97.00...103.00

Start:

Speed 1/min: 100
 Charge press. hPa: -
 Del. quantity cm³/: 70.00...130.00
 mind 1000S.: 70.00

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 800
 Inj.-qty. cm³/
 difference 1000S.: 2.00...8.00
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 800
 Supply pump
 pressure
 difference bar: -0.60...-0.20

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 2nd speed 1/min: 800

| | | | |
|--------------------------------------|--------------------------|-----------------------------------|-------------------------|
| Charge press | hPa: 1000 | Del. quantity cm ³ /: | 110.50...115.50 |
| TD travel | mm: 3.10...3.50 | 1000s.: | (109.00...117.00) |
| | mm: (2.60...4.00) | 7th speed | 1/min: 1000 |
| 3rd speed | 1/min: 1100 | Charge press. | hPa: 1000 |
| Charge press | hPa: 1000 | Del. quantity cm ³ /: | 117.50...118.50 |
| TD travel | mm: 4.20...5.00 | 1000s.: | (115.50...120.50) |
| | mm: (3.90...5.30) | 8th speed | 1/min: 800 |
| Supply-pump pressure characteristic: | | Charge press. | hPa: 1000 |
| 1st speed | 1/min: 500 | Del. quantity cm ³ /: | 118.50...123.50 |
| Charge press. | hPa: 1000 | 1000s.: | (117.00...125.00) |
| Supply-pump | | 9th speed | 1/min: 630 |
| pressure | bar: 3.80...4.40 | Charge press. | hPa: 1000 |
| 2nd speed | 1/min: 800 | Del. quantity cm ³ /: | 117.50...122.50 |
| Charge press. | hPa: 1000 | 1000s.: | (116.00...124.00) |
| Supply-pump | | 10th speed | 1/min: 630 |
| pressure | bar: 5.10...5.70 | Del. quantity cm ³ /: | 73.50...74.50 |
| 3rd speed | 1/min: 1100 | 1000s.: | (71.50...76.50) |
| Charge press. | hPa: 1000 | Mech. shutoff: | |
| Supply-pump | | Mech. Abstellung: | |
| pressure | bar: 6.10...6.70 | 1st speed | 1/min: 1400 |
| Overflow quantity at overflow valve: | | Charge press. | hPa: 1000 |
| 1st speed | 1/min: 630 | Del. quantity cm ³ /: | 0.00...3.00 |
| Overflow | : 41.70...83.40 | 1000s.: | (0.00...3.00) |
| quantity cm ³ /10s: | (41.70...83.40) | Idle delivery: | |
| 2nd speed | 1/min: 1400 | 1st speed | 1/min: 300 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: | 10.00...16.00 |
| Overflow | : 55.50...138.90 | 1000s.: | (8.00...18.00) |
| quantity cm ³ /10s: | (55.50...138.90) | Dispersion | cm ³ /: 3.5 |
| Delivery-quant. and breakaway char.: | | 1000s.: | (4.0) |
| 1nd speed | 1/min: 630 | 2nd speed | 1/min: 350 |
| Charge-air pressure-setting | | Del. quantity cm ³ /: | 0.00...5.00 |
| point | hPa: 400 | 1000s.: | (0.00...5.00) |
| LDA-stroke | mm: 7.5 | 3rd speed | 1/min: 400 |
| Del. quantity cm ³ /: | 97.50...98.50 | Del. quantity cm ³ /: | 0.00...4.00 |
| | 1000s.: (95.50...100.50) | 1000s.: | (0.00...4.00) |
| 2nd speed | 1/min: 1650 | Load-dependent start of delivery: | |
| Charge press. | hPa: 1000 | Inj.-qty.dif.measurement: | |
| Del. quantity cm ³ /: | 0.00...3.00 | 1st speed | 1/min: 800 |
| | 1000s.: (0.00...3.00) | Inj.-qty. cm ³ / : | -33.0...-31.0 |
| 3rd speed | 1/min: 1610 | difference | 1000s.: (-33.0...-31.0) |
| Charge press. | hPa: 1000 | 2nd speed | 1/min: 800 |
| Del. quantity cm ³ /: | 0.00...15.00 | Inj.-qty. cm ³ / : | 2.00...8.00 |
| | 1000s.: (0.00...15.00) | difference | 1000s.: (2.00...8.00) |
| 4th speed | 1/min: 1560 | SP press.-dif.measurement: | |
| Charge press. | hPa: 1000 | pompa di mandata (FP): | |
| Del. quantity cm ³ /: | 15.00...45.00 | 1st speed | 1/min: 800 |
| | 1000s.: (15.00...45.00) | Supply pump- | |
| 5th speed | 1/min: 1450 | pressure | : -0.30...-0.10 |
| Charge press. | hPa: 1000 | difference | bar: (-0.30...-0.10) |
| Del. quantity cm ³ /: | 97.00...103.00 | 2nd speed | 1/min: 800 |
| | 1000s.: (95.50...104.50) | Supply pump- | |
| 6th speed | 1/min: 1400 | pressure | : -0.60...-0.20 |
| Charge press. | hPa: 1000 | difference | bar: (-0.60...-0.20) |

Automatic starting fuel delivery:

1st speed 1/min: 320
Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 430
Del. quantity cm³/: 70.00...90.00
1000S.: (70.00...90.00)

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: 5.7...6.0 |
| MS | mm: 1.0..1.25 |
| SVS max. | mm: 2.8 |
| XK | mm: 25.0...27.0 |
| XL | mm: 12.9...16.2 |
| Ya | mm: 37.4...40.4 |
| Yb | mm: 46.2...51.6 |

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 04.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R159-4
 Type number : 0 460 426 044
 Customer Part-No. : 390 7665

Customer-specific information
 Customer : CDC

Engine : 6BT-5.9 IND.

Power KW: 142
 Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 016

Opening
 Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.60...4.00
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 900
 Del. quantity cm³/
 1000S.: 83.00...84.00
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 22.00...28.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1125
 Del. quantity cm³/
 1000S.: 37.00...43.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 100.00...140.00
 mind 1000S.: 100.0
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 900
 TD travel mm: 4.60...5.40
 mm: (4.30...5.70)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.60...4.00
 mm: (3.10...4.50)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.80...2.60
 mm: (1.50...2.90)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.00...3.60
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 900
 Supply-pump pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1175
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 5th speed 1/min: 1125
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 37.00...43.00
 1000S.: (34.00...46.00)
 9th speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 78.50...81.50
 1000S.: (77.00...83.00)
 Shutoff
 electromagnet Volt: 24
 Shutoff
 electromagnet Volt: 24
 12th speed 1/min: 900
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 83.00...84.00
 1000S.: (80.50...86.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 82.00...90.00
 1000S.: (80.00...92.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1050
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 22.00...28.00
 1000S.: (20.00...30.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 Shutoff
 electromagnet Volt: 24
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 100.00...150.00
 1000S.: (100.00...150.00)

2nd speed 1/min: 200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...85.00
1000s.: (45.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 100.00...140.00
1000s.: (100.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.3...1.7

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 03.06.92
 replaces : -
 Calibrating oil : ISO-4113

Injection pump : VE6/12F125CR232-1
 Type number : 0 460 426 078
 Customer Part-No. : 391 0679

Customer-specific information
 Customer : CDC

Engine : 6 BT-5.9

Power KW: 1250

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.1
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Charge press. hPa: 1000
 Setting value mm: 3.90...4.30
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 700
 Charge press hPa: 1000
 Setting value bar: 2.80...3.40
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 66.00...67.00
 Shutoff electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 30.50...31.50
 Shutoff electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 360
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1330
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 50.50...56.50

Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 45.00...145.00
 mind 1000S.: 45.00

| | |
|---|--|
| Shutoff electromagnet Volt: 24 | Overflow quantity : 55.60...139.00 cm3/10s: (40.60...153.00) |
| Inspection-pump test specifications Test specifications in parentheses | Delivery-quant. and breakaway char.: |
| Timing-device characteristic: | |
| 2nd speed 1/min: 1100 Charge press hPa: 1000 TD travel mm: 5.30...6.10 mm: (5.00...6.40) | 1nd speed 1/min: 700* Charge-air pressure-setting point hPa: 500 LDA-stroke mm: 7.0 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...61.00 1000s.: (56.50...64.50) |
| Shutoff electromagnet Volt: 24 3rd speed 1/min: 900 Charge press hPa: 1000 TD travel mm: 3.90...4.30 mm: (3.40...4.80) | 2nd speed 1/min: 1550 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) |
| Shutoff electromagnet Volt: 24 4th speed 1/min: 700 Charge press hPa: 1000 TD travel mm: 1.60...2.40 mm: (1.30...2.70) | 4th speed 1/min: 1430 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.00...55.00 1000s.: (15.00...55.00) |
| Shutoff electromagnet Volt: 24 | 5th speed 1/min: 1330 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 50.50...56.50 1000s.: (47.50...59.50) |
| Supply-pump pressure characteristic: | |
| 2nd speed 1/min: 700 Charge press. hPa: 1000 Supply-pump pressure bar: 2.80...3.40 Shutoff electromagnet Volt: 24 3rd speed 1/min: 900 Charge press. hPa: 1000 Supply-pump pressure bar: 3.70...4.30 Shutoff electromagnet Volt: 24 4th speed 1/min: 1100 Charge press. hPa: 1000 Supply-pump pressure bar: 4.50...5.10 Shutoff electromagnet Volt: 24 | 9th speed 1/min: 1250 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 63.50...66.50 1000s.: (62.00...68.00) 11th speed 1/min: 1100 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 64.00...67.00 1000s.: (61.50...69.50) 12th speed 1/min: 900 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 66.00...67.00 1000s.: (63.50...69.50) 18th speed 1/min: 500 Charge press. hPa: - Shutoff electromagnet Volt: 24 Del. quantity cm3/: 30.50...31.50 1000s.: (27.00...35.00) |
| Overflow quantity at overflow valve: | Mech. shutoff: Mech. Abstellung: |
| 1st speed 1/min: 500 Charge press. hPa: - Shutoff electromagnet Volt: 24 Overflow : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1250 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 | |

| | | | |
|-----------------------------------|--------------------------|------------|---|
| 1st speed | 1/min: 1250 | K | mm: - |
| Charge press. | hPa: 1000 | KF | mm: 5.0...5.4 |
| Del. quantity cm ³ /: | 0.00...3.00 | MS | mm: 1.1...1.5 |
| | 1000S.: (0.00...3.00) | LDA stroke | mm: 7.0 |
| Shutoff | | | |
| electromagnet volt: | 24 | Remarks: | : |
| Electr. shutoff: | | | Operate control lever after each manifold-pressure compensator pressure change. |
| 1st speed | 1/min: 360 | | * Correction at adjusting nut (46) |
| Charge press. | hPa: - | | |
| Del. quantity cm ³ /: | 0.00...3.00 | | |
| | 1000S.: (0.00...3.00) | | |
| Shutoff | | | |
| electromagnet volt: | - | | |
| Idle delivery: | | | |
| 1st speed | 1/min: 360 | | |
| Shutoff | | | |
| electromagnet Volt: | 24 | | |
| Del. quantity cm ³ /: | 8.00...14.00 | | |
| | 1000S.: (6.00...16.00) | | |
| Dispersion | cm ³ /: | 5.5 | |
| | 1000S.: (7.0) | | |
| 2nd speed | 1/min: 450 | | |
| Shutoff | | | |
| electromagnet Volt: | 24 | | |
| Del. quantity cm ³ /: | 0.00...4.00 | | |
| | 1000S.: (0.00...4.00) | | |
| Automatic starting fuel delivery: | | | |
| 1st speed | 1/min: 300 | | |
| Shutoff | | | |
| electromagnet Volt: | 24 | | |
| Del. quantity cm ³ /: | 55.00...115.00 | | |
| | 1000S.: (55.00...115.00) | | |
| 2nd speed | 1/min: 480 | | |
| Shutoff | | | |
| electromagnet Volt: | 24 | | |
| Del. quantity cm ³ /: | 55.00...95.00 | | |
| | 1000S.: (55.00...95.00) | | |
| 4th speed | 1/min: 100 | | |
| Shutoff | | | |
| electromagnet Volt: | 24 | | |
| Del. quantity cm ³ /: | 45.00...145.00 | | |
| | 1000S.: (45.00...145.00) | | |
| Shutoff electromagnet: | | | |
| Cut-in | | | |
| min voltage | : 20.0 | | |
| Rated voltage | : 24.0 | | |
| Mounting and assembly dimensions: | | | |
| Designation | | | |
| F12 | | | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 11.06.92
 replaces : 06.11.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R240
 Type number : 0 460 426 084
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : T6 60 cc Truck

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.25
 (from BDC): 0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.0
 mm: +0.02

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.30...1.70
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
 Charge press hPa: 1000
 Setting value bar: 6.50...7.10
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 97.50...98.50
 Shutoff electromagnet Volt: 24
 Dispersion cm³/ : 5.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 85.00...86.00
 Shutoff electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 16.50...20.50
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/ : 5.0
 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1450
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 47.00...53.00
 Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 115.00...155.00
 mind 1000S.: 115.0
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.3
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 94.00...95.00
1000s.: (91.00...98.00)

2nd speed 1/min: 1520
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 13.50...21.50
1000s.: (10.50...24.50)

3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 0.00...7.00
1000s.: (0.00...7.00)

5th speed 1/min: 1450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 47.00...53.00
1000s.: (44.00...56.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 94.00...97.00
1000s.: (92.00...99.00)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 93.00...96.00
1000s.: -

12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³: 98.50...99.50
1000s.: (96.00...102.00)

18th speed 1/min: 700
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 86.50...87.50
1000s.: (84.00...90.00)

21th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 81.00...85.00
1000s.: -

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 16.50...20.50
1000S.: (13.50...23.50)

Dispersion cm³: 5.0
1000S.: (5.0)

2nd speed 1/min: 350
Shutoff

electromagnet Volt: 24
Del. quantity cm³: 4.50...10.50
1000S.: (2.50...12.50)

4th speed 1/min: 400

Shutoff
electromagnet Volt: 24
Del. quantity cm³: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 120.00...160.00
1000S.: (95.00...135.00)

2nd speed 1/min: 230

Shutoff
electromagnet Volt: 24
Del. quantity cm³: 35.00...85.00
1000S.: (35.00...85.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 24
Del. quantity cm³: 120.00...160.00
1000S.: (115.00...155.00)

Shutoff magnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: K-OT |
| MS | mm: 0.6...1.0 |
| SVS max. | mm: 3.2 |
| LDA stroke | mm: 6.3 |
| XK | mm: 17.0...19.0 |
| XL | mm: 12.8...16.2 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 50.6...58.8 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 11.06.92
 replaces : 15.07.91
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R241
 Type number : 0 460 426 085
 Customer Part-No. :

Customer-specific information.
 Customer : PERKINS

Engine : T6 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 2.10...2.50

Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 7.20...7.80
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 92.00...93.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 3.5
 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 77.50...80.50
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 13.00...17.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 52.00...58.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 90.00...130.00
 mind 1000S.: 90.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
 Charge press hPa: 1000
 TD travel mm: 2.90...3.70
 mm: (2.60...4.00)
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.10...2.50
 mm: (1.60...3.00)
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 950
 Charge press hPa: 1000
 TD travel mm: 0.50...1.10
 mm: (0.10...1.50)
 Shutoff electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.00...8.60
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.20...7.80
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 700
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.50...6.10
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
 Charge-air pressure-setting point hPa: 350
 LDA-stroke mm: 6.1
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 84.50...85.50
 1000S.: (81.50...88.50)
 2nd speed 1/min: 1530
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1480
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 8.00...24.00
 1000S.: (6.00...26.00)
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 52.00...58.00
 1000S.: (49.00...61.00)
 9th speed 1/min: 1300
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 83.00...86.00
 1000S.: (81.00...88.00)
 10th speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 89.50...92.50
 1000S.: (87.50...94.50)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quynitity cm³/: 92.00...93.00
 1000S.: (89.50...95.50)
 18th speed 1/min: 700
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 77.50...80.50
 1000S.: (76.00...82.00)
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 71.50...74.50
 1000S.: (69.50...76.50)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1300

| | | | |
|-----------------------------------|---------------------------|---|-----------------|
| Del. quantity cm ³ /: | 0.00...3.00 | K | mm: - |
| | 1000s.: (0.00...3.00) | KF | mm: K-OT |
| Shutoff | | MS | mm: 1.1...1.3 |
| electromagnet volt: | 12 | SVS max. | mm: 6.0 |
| Electr. shutoff: | | LDA stroke | mm: 6.1 |
| 1st speed 1/min: | 350 | XK | mm: 20.0...22.0 |
| Del. quantity cm ³ /: | 0.00...3.00 | XL | mm: 10.5...13.9 |
| | 1000s.: (0.00...3.00) | Ya | mm: 37.2...39.2 |
| Idle delivery: | | Yb | mm: 44.9...53.5 |
| 1st speed 1/min: | 350 | Remarks: | |
| Shutoff | | Overflow restriction 0.55 mm - Part No. | |
| electromagnet Volt: | 12 | ..303 | : |
| Del. quantity cm ³ /: | 13.00...17.00 | | |
| | 1000s.: (10.00...20.00) | | |
| Dispersion cm ³ /: | 3.5 | | |
| | 1000s.: (4.0) | | |
| 2nd speed 1/min: | 400 | | |
| Shutoff | | | |
| electromagnet Volt: | 12 | | |
| Del. quantity cm ³ /: | 4.00...10.00 | | |
| | 1000s.: (2.00...12.00) | | |
| 4th speed 1/min: | 450 | | |
| Shutoff | | | |
| electromagnet Volt: | 12 | | |
| Del. quantity cm ³ /: | 0.00...3.00 | | |
| | 1000s.: (0.00...3.00) | | |
| Automatic starting fuel delivery: | | | |
| 1st speed 1/min: | 150 | | |
| Shutoff | | | |
| electromagnet Volt: | 12 | | |
| Del. quantity cm ³ /: | 100.00...140.00 | | |
| | 1000s.: (100.00...140.00) | | |
| 2nd speed 1/min: | 250 | | |
| Shutoff | | | |
| electromagnet Volt: | 12 | | |
| Del. quantity cm ³ /: | 40.00...70.00 | | |
| | 1000s.: (40.00...70.00) | | |
| 4th speed 1/min: | 100 | | |
| Shutoff | | | |
| electromagnet Volt: | 12 | | |
| Del. quantity cm ³ /: | 90.00...130.00 | | |
| | 1000s.: (90.00...130.00) | | |
| Shutoff electromagnet: | | | |
| Cut-in | | | |
| min voltage | : 10.0 | | |
| Rated voltage | : 12.0 | | |
| Mounting and assembly dimensions: | | | |
| Designation | | | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 09.06.92
 replaces : 14.07.88
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1000R225-15
 Type number : 0 460 426 093
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.5
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750

Setting value mm: 3.50...3.90
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
 Del. quantity cm³/
 1000S.: 72.00...73.00
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1040
 Del. quantity cm³/
 1000S.: 53.50...59.50
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...120.00
 mind 1000S.: 60.00
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000
 TD travel mm: 4.60...5.40
 mm: (4.30...5.70)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.50...3.90
 mm: (3.00...4.40)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.40...2.20
 mm: (1.10...2.50)
 Shutoff
 electromagnet Volt: 24
Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 4.60...5.20
 Shutoff electromagnet Volt: 24
Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1000
 Shutoff electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1120
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1100
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...15.00
 1000s.: (0.00...15.00)
 5th speed 1/min: 1040
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 53.50...59.50
 1000s.: (50.50...62.50)
 8th speed 1/min: 1060
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 15.00...45.00
 1000s.: (15.00...45.00)
 9th speed 1/min: 1000
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 68.50...71.50
 1000s.: (67.00...73.00)
 11th speed 1/min: 750
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 71.50...75.50
 1000s.: (69.50...77.50)
 12th speed 1/min: 900
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 72.00...73.00
 1000s.: (69.50...75.50)
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 57.00...65.00
 1000s.: (55.00...67.00)
Mech. shutoff:
Mech. Abstellung:
 1st speed 1/min: 1000
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: 24
Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
Idle delivery:
 1st speed 1/min: 375
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 8.00...14.00
 1000s.: (6.00...16.00)
 Dispersion cm³: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 450
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...4.00
 1000s.: (0.00...4.00)
Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 60.00...120.00
 1000s.: (60.00...120.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation mm:
K -
KF 5.0...5.4
MS 0.8...1.2
SVS max. 1.2
XK 18.8...20.8
XL 11.7...15.1
Ya 34.8...38.8
Yb 42.2...47.8

Remarks:
: C.D.C. # 391 2561
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : PER
 Edition : 11.06.92
 replaces : 06.11.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R240-2
 Type number : 0 460 426 094
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : T6 60 cc Truck

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.25
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.0
 mm: +0.02
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.30...1.70

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value bar: 6.50...7.10

Full-load del. with charge press.:

Speed 1/min: 700
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 99.00...100.00
 Dispersion cm³/: 5.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 87.00...88.00

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 16.50...20.50
 Del. quantity cm³/: 5.0
 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1450
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 47.00...53.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 120.00...160.00
 mind 1000S.: 120.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

| | |
|--------------|--------------------------------------|
| 2nd speed | 1/min: 1300 |
| Charge press | hPa: 1000 |
| TD travel | mm: 2.00...2.80 mm: (1.70...3.10) |
| 3rd speed | 1/min: 1100 |
| Charge press | hPa: 1000 |
| TD travel | mm: 1.30...1.70 mm: (0.80...2.20) |
| 4th speed | 1/min: 1000 |

Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 7.30...7.90
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6.50...7.10
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting point hPa: 400
LDA-stroke mm: 6.3
Del. quantity cm³: 95.00...96.00
1000S.: (92.50...98.50)
2nd speed 1/min: 1520
Charge press. hPa: 1000
Del. quantity cm³: 13.50...21.50
1000S.: (10.50...24.50)
3rd speed 1/min: 1580
Charge press. hPa: 1000
Del. quantity cm³: 0.00...7.00
1000S.: (0.00...7.00)
5th speed 1/min: 1450
Charge press. hPa: 1000
Del. quantity cm³: 47.00...53.00
1000S.: (44.00...56.00)
9th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³: 95.00...98.00
1000S.: (93.50...99.50)
10th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³: 99.50...102.50
1000S.: (98.00...104.00)
12th speed 1/min: 700
Charge press. hPa: 1000

Del. quynity cm³: 99.00...100.00
1000S.: (96.50...102.50)
18th speed 1/min: 700
Del. quantity cm³: 87.00...88.00
1000S.: (84.50...90.50)
20th speed 1/min: 500
Del. quantity cm³: 80.00...83.00
1000S.: (78.50...84.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³: 16.50...20.50
1000S.: (13.50...23.50)
Dispersion cm³: 5.0
1000S.: (5.0)
2nd speed 1/min: 350
Del. quantity cm³: 4.50...10.50
1000S.: (2.50...12.50)
4th speed 1/min: 400
Del. quantity cm³: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³: 120.00...160.00
1000S.: (95.00...135.00)

2nd speed 1/min: 230
Del. quantity cm³: 35.00...85.00
1000S.: (35.00...85.00)

4th speed 1/min: 100
Del. quantity cm³: 120.00...160.00
1000S.: (120.00...160.00)

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: K-OT |
| MS | mm: 0.6...1.0 |
| XK | mm: 17.0...19.0 |
| XL | mm: 12.8...16.2 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 50.6...58.8 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 05.06.92
 replaces : 09.11.88
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R173-8
 Type number : 0 460 426 101
 Customer Part-No. :

Customer-specific information
 Customer : CUMMINS/GB

Engine : 6 BTA-590

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.85
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value mm: 1.40...1.80

Supply-pump pressure

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value bar: 3.20...3.80

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 82.00...83.00
 Dispersion cm³/ : 4.0
 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000s.: 40.00...41.00

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000s.: 4.00...8.00
 Del. quantity cm³/ : 5.5
 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000s.: 65.00...71.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 70.00...120.00
 mind 1000s.: 70.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 Charge press. hPa: 1000
 TD travel mm: 2.30...3.10
 mm: (2.00...3.40)

3rd speed 1/min: 750
 Charge press. hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)

4th speed 1/min: 600

| | | | |
|---|--|---------------------------------------|------------------------|
| Charge press | hPa: 1000 | Del. quantity cm ³ /: | 82.00...83.00 |
| TD travel | mm: 0.40...1.20 | 1000s.: | (79.50...85.50) |
| | mm: (0.10...1.50) | 18th speed | 1/min: 500 |
| Supply-pump pressure characteristic: | | | |
| 1st speed | 1/min: 500 | Del. quantity cm ³ /: | 40.00...41.00 |
| Charge press. | hPa: 1000 | 1000s.: | (36.00...45.00) |
| Supply-pump | pressure | 20th speed | 1/min: 500 |
| pressure | bar: 2.10...2.70 | Charge press. | hPa: 1000 |
| 2nd speed | 1/min: 750 | Del. quantity cm ³ /: | 82.00...90.00 |
| Charge press. | hPa: 1000 | Mech. shutoff: | |
| Supply-pump | pressure | Mech. Abstellung: | |
| pressure | bar: 3.20...3.80 | 1st speed | 1/min: 1250 |
| 3rd speed | 1/min: 1050 | Del. quantity cm ³ /: | 0.00...3.00 |
| Charge press. | hPa: 1000 | 1000s.: | (0.00...3.00) |
| Supply-pump | pressure | Idle delivery: | |
| pressure | bar: 4.30...4.90 | 1st speed | 1/min: 375 |
| Overflow quantity at overflow valve: | | Del. quantity cm ³ /: | 4.00...8.00 |
| 1st speed | 1/min: 500 | 1000s.: | (1.00...11.00) |
| Overflow | : 41.70...83.40 | Dispersion | cm ³ /: 5.5 |
| quantity | cm ³ /10s: (41.70...83.40) | 1000s.: | (7.0) |
| 2nd speed | 1/min: 1250 | 2nd speed | 1/min: 500 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: | 0.00...4.00 |
| Overflow | : 55.60...139.00 | 1000s.: | (0.00...4.00) |
| quantity | cm ³ /10s: (55.60...139.00) | Automatic starting fuel delivery: | |
| Delivery-quant. and breakaway char.: | | | |
| 1st speed | 1/min: 700 | 1st speed | 1/min: 200 |
| Charge-air pressure-setting | | Del. quantity cm ³ /: | 60.00...110.00 |
| point | hPa: 450 | 1000s.: | (60.00...110.00) |
| LDA-stroke | mm: 7.0 | 2nd speed | 1/min: 370 |
| Del. quantity cm ³ /: | 67.00...68.00 | Del. quantity cm ³ /: | 20.00...60.00 |
| | 1000s.: (63.00...72.00) | 1000s.: | (20.00...60.00) |
| 2nd speed | 1/min: 1400 | 4th speed | 1/min: 100 |
| Charge press. | hPa: 1000 | Del. quantity cm ³ /: | 70.00...120.00 |
| Del. quantity cm ³ /: | 0.00...3.00 | 1000s.: | (70.00...120.00) |
| | 1000s.: (0.00...3.00) | Mounting and assembly dimensions: | |
| 3rd speed | 1/min: 1330 | Designation | |
| Charge press. | hPa: 1000 | K | mm: - |
| Del. quantity cm ³ /: | 15.50...55.50 | KF | mm: 5.0...5.4 |
| | 1000s.: (15.50...55.50) | MS | mm: 1.2...1.6 |
| 5th speed | 1/min: 1300 | SVS max. | mm: 2.2 |
| Charge press. | hPa: 1000 | XK | mm: 18.8...20.8 |
| Del. quantity cm ³ /: | 65.00...71.00 | XL | mm: 12.9...16.3 |
| | 1000s.: (62.00...74.00) | Ya | mm: 34.8...38.8 |
| 9th speed | 1/min: 1250 | Yb | mm: 42.7...48.1 |
| Charge press. | hPa: 1000 | Remarks: | |
| Del. quantity cm ³ /: | 73.50...76.50 | | : |
| | 1000s.: (72.00...78.00) | | C.D.C. # 3 278 482 |
| 10th speed | 1/min: 1050 | | : |
| Charge press. | hPa: 1000 | | |
| Del. quantity cm ³ /: | 78.00...81.00 | | |
| | 1000s.: (76.50...82.50) | | |
| 12th speed | 1/min: 750 | | |
| Charge press. | hPa: 1000 | | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 05.06.92
 replaces : 11.07.89
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1250R173-
 Type number : 0 460 426 102
 Customer Part-No. :

Customer-specific information
 Customer : CUMMINS/US

Engine : 6 BTA-590IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.85
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value mm: 1.30...1.70
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Charge press hPa: 1000
 Setting value bar: 3.20...3.80
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 84.50...85.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 68.50...69.50
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 59.00...65.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...120.00
 mind 1000S.: 70.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 Charge press hPa: 1000
 TD travel mm: 2.00...2.80
 mm: (1.70...3.10)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 Charge press hPa: 1000
 TD travel mm: 1.30...1.70
 mm: (0.80...2.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600
 Charge press hPa: 1000
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 2.20...2.80

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.20...3.80

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1050
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.50...5.10

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 77.50...78.50
 1000S.: (74.00...82.00)

2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

3rd speed 1/min: 1330
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)

5th speed 1/min: 1300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 59.00...65.00
 1000S.: (56.00...68.00)

9th speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 76.00...79.00
 1000S.: (74.50...80.50)

10th speed 1/min: 1050
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.50...83.50
 1000S.: (78.50...85.50)

12th speed 1/min: 750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 84.50...85.50
 1000S.: (82.00...88.00)

18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.50...69.50
 1000S.: (65.00...73.00)

20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 84.00...92.00

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

| | | |
|--|-----------------|---|
| Shutoff electromagnet volt: 12 | Yb | mm: 44.2...49.6 |
| Electr. shutoff: | Remarks: | : C.D.C. # 390 8219 |
| 1st speed 1/min: 375 Del. quantity cm ³ : 0.00...3.00 1000s.: (0.00...3.00) | | : Operate control lever after each manifold-pressure compensator pressure change. |
| Idle delivery: | | * Correction at adjusting nut (46) |
| 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 8.00...14.00 1000s.: (6.00...16.00) Dispersion cm ³ : 5.5 1000s.: (7.0) | | |
| 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 0.00...4.00 1000s.: (0.00...4.00) | | |
| Automatic starting fuel delivery: | | |
| 1st speed 1/min: 250 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 70.00...120.00 1000s.: (70.00...120.00) | | |
| 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 48.00...88.00 1000s.: (48.00...88.00) | | |
| 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 70.00...120.00 1000s.: (70.00...120.00) | | |
| Shutoff electromagnet: | | |
| Cut-in min voltage : 10.0 Rated voltage : 12.0 | | |
| Mounting and assembly dimensions: | | |
| Designation | | |
| K | mm: - | |
| KF | mm: 5.0...5.4 | |
| MS | mm: 1.0...1.4 | |
| SVS max. | mm: 2.0 | |
| XK | mm: 18.8...20.8 | |
| XL | mm: 13.8...17.2 | |
| Ya | mm: 34.8...38.8 | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 15.06.92
 replaces : 16.05.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R278
 Type number : 0 460 426 103
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BT- 590A CHRYSLER

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery block
 Piston stroke mm: 1.4
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1200
 Setting value mm: 1.30...1.70

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press. hPa: 1200
 Setting value bar: 6.80...7.40
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
 Charge press. hPa: 1200
 Del. quantity cm³/
 1000S.: 73.00...74.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 51.00...52.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 9.0
 1000S.: (9.0)

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Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 5.50...9.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340
 Charge press. hPa: 1200
 Del. quantity cm³/
 1000S.: 52.50...58.50

Start:

Speed 1/min: 100
 Del. quantity cm³: 60.00...160.00
 mind 1000S.: 60.00
 KSB/AFB
 Valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
 Charge press hPa: 1200
 TD travel mm: 2.20...3.00
 mm: (1.90...3.30)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1200
 TD travel mm: 1.30...1.70
 mm: (0.80...2.20)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 Charge press hPa: 1200
 TD travel mm: 0.50...1.30
 mm: (0.20...1.60)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 450
 TD travel mm: 3.00...4.00
 mm: -
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 4.10...4.70
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 6.80...7.40
 KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 7.50...8.10
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting point hPa: 700
 LDA-stroke mm: 6.2
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 68.00...69.00
 1000S.: (64.50...72.50)
 2nd speed 1/min: 1550
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000S.: (0.00...3.00)
 4th speed 1/min: 1410
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1340
 Charge press. hPa: 1200

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.50...58.50
 1000s.: (49.50...61.50)
 9th speed 1/min: 1250
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.00...72.00
 1000s.: (67.50...73.50)
 10th speed 1/min: 750
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 72.00...77.00
 1000s.: (70.00...79.00)
 12th speed 1/min: 1100
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 73.00...74.00
 1000s.: (70.50...76.50)
 18th speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...52.00
 1000s.: (47.50...55.50)
 20th speed 1/min: 500
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 78.00...90.00
 1000s.: -

 Mech. shutoff:
 Mech. Abstellung:

 1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12

 Electr. shutoff:
 1st speed 1/min: 350

Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 KSB/AFB
 valve Volt: 12

 Idle delivery:
 1st speed 1/min: 350
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5.50...9.50
 1000s.: (2.50...12.50)
 Dispersion cm³/: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000s.: (0.00...4.00)
 3rd speed 1/min: 300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.50...16.50
 1000s.: -

 Automatic starting fuel delivery:
 1st speed 1/min: 130
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 60.00...160.00
 1000s.: (60.00...160.00)

 2nd speed 1/min: 250
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.00...50.00
 1000s.: (30.00...50.00)

 4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 60.00...160.00
 1000s.: (60.00...160.00)

 Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|------------|-----------------|
| K | mm: 3.7 |
| KF | mm: K-OT |
| MS | mm: 1.0...1.4 |
| SVS max. | mm: 1.4 |
| LDA stroke | mm: 6.2 |
| XK | mm: 18.8...20.8 |
| XL | mm: 12.5...15.9 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 42.1...47.7 |

Remarks:

: C.D.C. # 391 0769
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 15.06.92
 replaces : 09.11.88
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R296
 Type number : 0 460 426 105
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BT- 590 I TRAKTOR

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value mm: 3.10...3.50
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Charge press hPa: 1000
 Setting value bar: 4.10...4.70
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 82.50...83.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 39.00...40.00
 Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 4.00...10.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 50.00...56.00
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 65.00...105.00
 mind 1000S.: 65.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 5.10...5.90
mm: (4.80...6.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.00...3.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.10...4.70
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.50...77.50
1000S.: (73.00...81.00)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...56.00
1000S.: (47.00...59.00)
9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.50...69.50
1000S.: (65.00...71.00)
10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.00...75.00
1000S.: (70.00...77.00)
12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quynity cm³/: 82.50...83.50
1000S.: (80.00...86.00)
18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 39.00...40.00
1000S.: (35.50...43.50)
20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 82.00...90.00
1000S.: -
Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...10.00
1000S.: (2.00...12.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| | |
|-------------|---------------|
| Designation | |
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 1.3...1.7 |
| SVS max. | mm: 1.8 |

| | |
|----|-----------------|
| XK | mm: 18.8...20.8 |
| XL | mm: 10.4...13.8 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 39.2...44.8 |

Remarks:

: C.D.C. # 391 2115

: * Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 01.02.89
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1100R232-2
 Type number : 0 460 426 111
 Customer Part-No. :

Customer-specific information
 Customer : CUMMINS/GB

Engine : 6 BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.06)

Start of delivery block
 Piston stroke mm: 1.6
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 1.80...2.20
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 7.40...8.00
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 67.50...68.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/ 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 56.50...57.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/ 9.0
 1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 340
 Del. quantity cm³/
 1000S.: 10.00...12.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/ 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 44.50...50.50

Start:

Speed 1/min: 100
 Del. quantity cm³/ 65.00...125.00
 mind 1000S.: 65.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.40...3.20
mm: (2.10...3.50)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.80...2.30
mm: (1.30...2.70)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.10...7.70
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.40...8.00
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.90...8.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.50...67.50
1000s.: (63.00...71.00)
2nd speed 1/min: 1280
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1230
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...15.00
1000s.: (0.00...15.00)
4th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)
5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.50...50.50
1000s.: (41.50...53.50)
9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 64.50...67.50
1000s.: (63.00...69.00)
11th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 68.50...72.50
1000s.: (66.50...74.50)
12th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.50...68.50
1000s.: (65.00...71.00)
18th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.50...57.50
1000S.: (53.00...61.00)
20th speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.50...82.50
1000S.: -

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 340
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 340
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...12.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 65.00...125.00
1000S.: (65.00...125.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|------------|-----------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 1.3...1.7 |
| SVS max. | mm: 1.0 |
| LDA stroke | mm: 7.0 |
| XK | mm: 21.8...23.8 |
| XL | mm: 11.7...15.1 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 40.8...46.2 |

Remarks:

: C.D.C. # 391 0712
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 16.06.92
 replaces : 09.11.88
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R307
 Type number : 0 460 426 112
 Customer Part-No. :

Customer-specific information
 Customer : MAN

Engine : D 0826 TF LKW,BUS

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Charge press. hPa: 1000
 Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value bar: 8.10...8.70

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 120.50...121.50
 Dispersion cm³/ : 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 88.50...89.50

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 26.50...33.50
 Del. quantity cm³/ : 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1350
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 107.00...113.00

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 70.00...130.00
 mind 1000S.: 70.00

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³/
 difference 1000S.: 39.50...47.50#
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1000
 Charge press. hPa: 1000
 TD-travel
 difference mm: 0.80...1.00#
 SP press.-dif.measurement
 pompa di mandata (FP)

1. Speed 1/min: 1000
Charge press hPa: 1000
Supply pump pressure difference bar: 0.10...0.30*

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 3.50...4.30
mm: (3.20...4.60)
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.80...3.20
mm: (2.30...3.70)
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 5.80...6.40
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 8.10...8.70
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 8.50...9.10

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600
Charge-air pressure-setting point hPa: 300
Del. quantity cm³/: 104.50...105.50
1000S.: (102.50...107.50)
2nd speed 1/min: 1520
Charge press. hPa: 1000

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1480
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1430
Charge press. hPa: 1000
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 107.00...113.00
1000S.: (105.50...114.50)
9th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/: 116.50...121.50
1000S.: (115.00...123.00)
12th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/: 120.50...121.50
1000S.: (118.50...123.50)
15th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/: 120.50...125.50
1000S.: (119.00...127.00)
18th speed 1/min: 600
Del. quantity cm³/: 88.50...89.50
1000S.: (86.50...91.50)
20th speed 1/min: 600
Charge press. hPa: 1000
Del. quantity cm³/: 118.50...127.50
1000S.: (117.00...129.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 26.50...33.50
1000S.: (24.50...35.50)
Dispersion cm³/: 3.5
1000S.: (4.0)
2nd speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 350
Del. quantity cm³/: 3.00...12.00
1000S.: (1.50...13.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

2nd speed 1/min: 1000
Charge press. hPa: 1000

Inj.-qty. cm³/: 11.00...13.00*
difference 1000s.: (11.00...13.00)
4th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/: 39.50...47.50#
difference 1000s.: (39.50...47.50)
5th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/: 2.00...8.00'
difference 1000s.: (2.00...8.00)
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.80...1.00#
difference mm: (0.80...1.00)
4th speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.10...0.90'
difference mm: (0.10...0.90)
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 95.00...135.00
1000s.: (95.00...135.00)

2nd speed 1/min: 450
Del. quantity cm³/: 55.00...95.00
1000s.: (55.00...95.00)

4th speed 1/min: 100
Del. quantity cm³/: 70.00...130.00
1000s.: (70.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

MS mm: 0.6...1.0
SVS max. mm: 0.6
Ya mm: 37.4...40.4
Yb mm: 46.4...51.6

Remarks:

:
* Correction at adjusting nut (46)

BOSCH INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 13.07.89
 Calibrating oil : ISO-4113

 Injection pump : VE6/12F1100R225-17
 Type number : 0 460 426 118
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Setting value mm: 4.20...4.60
 Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
 Setting value bar: 4.70...5.30
 Shutoff electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 67.00...68.00
 Shutoff electromagnet Volt: 24
 Dispersion cm³/ : 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 11.00...13.00
 Shutoff electromagnet Volt: 24

Del. quantity cm³/ : 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
 Del. quantity cm³/
 1000S.: 44.30...50.30

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 70.00...150.00
 mind 1000S.: 70.00
 Shutoff electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 5.50...6.30
 mm: (5.20...6.60)

Shutoff electromagnet Volt: 24
 3rd speed 1/min: 900
 TD travel mm: 4.20...4.60
 mm: (3.70...5.10)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 TD travel mm: 2.90...3.70
 mm: (2.60...4.00)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.90...3.50
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.50...6.10
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 Supply-pump pressure bar: 4.00...4.60
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1240
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1220
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...15.00
 1000s.: (0.00...15.00)
 4th speed 1/min: 1180
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³: 0.00...40.00
 1000s.: (0.00...40.00)
 5th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 44.30...50.30
 1000s.: (41.30...53.30)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 64.50...67.50
 1000s.: (63.00...69.00)
 11th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 82.00...87.00
 1000s.: (81.00...89.00)
 12th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 67.00...68.00
 1000s.: (64.50...70.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 85.50...93.50
 1000s.: (83.50...95.50)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1100
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 400
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 11.00...13.00
 1000s.: (7.00...17.00)
 Dispersion cm³: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³: 0.00...4.00
 1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 80.00...160.00
1000s.: (80.00...160.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...100.00
1000s.: (70.00...100.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...150.00
1000s.: (70.00...150.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.3...1.7
SVS max. mm: 2.2
XK mm: 18.8...20.8
XL mm: 10.9...14.3
Ya mm: 34.8...38.8
Yb mm: 41.6...47.0

Remarks:
: C.D.C. # 391 2126
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 05.06.92
 replaces : 11.07.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R173-12
 Type number : 0 460 426 126
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BTA-590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.85
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value mm: 1.30...1.70
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 83.00...84.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 67.50...68.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 9.0
 1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 9.00...13.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 60.00...66.00

Start:

Speed 1/min: 100
 Del. quantity cm³: 80.00...140.00
 mind 1000S.: 80.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...3.00
 mm: (1.90...3.30)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 Charge press hPa: 1000
 TD travel mm: 1.30...1.70
 mm: (0.80...2.20)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600
 Charge press hPa: 1000
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 2.60...3.20
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 750
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 77.50...78.50
 1000s.: (73.50...82.50)
 2nd speed 1/min: 1260
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 15.00...55.00
 1000s.: (15.00...55.00)
 5th speed 1/min: 1150
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 60.00...66.00
 1000s.: (57.00...69.00)
 9th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 78.50...81.50
 1000s.: (77.00...83.00)
 10th speed 1/min: 900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 80.50...83.50
 1000s.: (79.00...85.00)
 12th speed 1/min: 750
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 83.00...84.00
 1000s.: (80.50...86.50)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 67.50...68.50
 1000s.: (63.50...72.50)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 81.00...89.00
 1000s.: -
 Mech. shutoff:
 Mech. Abstellung:

| | | |
|---|-----------------|---|
| 1st speed 1/min: 1100 | Yb | mm: 42.0...47.6 |
| Del. quantity cm ³ /: 0.00...3.00 | Remarks: | : C.D.C. # 390 4727 |
| 1000s.: (0.00...3.00) | | : |
| Shutoff electromagnet volt: 12 | | Operate control lever after each manifold-pressure compensator pressure change. |
| Electr. shutoff: | | * Correction at adjusting nut (46) |
| 1st speed 1/min: 375 | | |
| Del. quantity cm ³ /: 0.00...3.00 | | |
| 1000s.: (0.00...3.00) | | |
| Idle delivery: | | |
| 1st speed 1/min: 375 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 9.00...13.00 | | |
| 1000s.: (6.00...16.00) | | |
| Dispersion cm ³ /: 5.5 | | |
| 1000s.: (7.0) | | |
| 2nd speed 1/min: 500 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 0.00...4.00 | | |
| 1000s.: (0.00...4.00) | | |
| Automatic starting fuel delivery: | | |
| 1st speed 1/min: 280 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 80.00...140.00 | | |
| 1000s.: (80.00...140.00) | | |
| 2nd speed 1/min: 440 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 50.00...80.00 | | |
| 1000s.: (50.00...80.00) | | |
| 4th speed 1/min: 100 | | |
| Shutoff electromagnet Volt: 12 | | |
| Del. quantity cm ³ /: 80.00...140.00 | | |
| 1000s.: (80.00...140.00) | | |
| Shutoff electromagnet: | | |
| Cut-in | | |
| min voltage : 10.0 | | |
| Rated voltage : 12.0 | | |
| Mounting and assembly dimensions: | | |
| Designation | - | |
| K | mm: - | |
| KF | mm: 5.0...5.4 | |
| MS | mm: 1.0...1.4 | |
| Ya | mm: 34.8...38.8 | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 02.02.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R225-19
 Type number : 0 460 426 127
 Customer Part-No. :

Customer-specific information
 Customer : CUMMINS/GB

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.40...3.80
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.70...4.30
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000s.: 73.00...74.00
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000s.: 8.00...14.00
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 5.5
 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
 Del. quantity cm³/
 1000s.: 52.00...58.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...120.00
 mind 1000s.: 60.00
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 TD travel mm: 4.90...5.70
 mm: (4.60...6.00)
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750

TD travel mm: 3.40...3.80
 mm: (2.90...4.30)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.20...2.00
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 2.60...3.20
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.70...4.30
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1050
 Supply-pump pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1200
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1170
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...15.00
 1000s.: (0.00...15.00)
 5th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 52.00...58.00
 1000s.: (49.00...61.00)
 8th speed 1/min: 1130

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...45.00
 1000s.: (15.00...45.00)
 9th speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 68.50...71.50
 1000s.: (67.00...73.00)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 71.00...74.00
 1000s.: (69.00...76.00)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 73.00...74.00
 1000s.: (70.50...76.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 59.00...67.00
 1000s.: (57.00...69.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1050
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 8.00...14.00
 1000s.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...4.00
 1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 60.00...120.00
1000s.: (60.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 30.00...60.00
1000s.: (30.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 60.00...120.00
1000s.: (60.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 0.8...1.2

SVS max. mm: 2.2

Ya mm: 34.8...38.8

Yb mm: 40.7...46.3

Remarks:

: C.D.C. # 391 0252

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 02.02.89
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1050R225-20
 Type number : 0 460 426 128
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BT -5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.40...3.80
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000S.: 64.50...65.50
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 10.00...12.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
 Del. quantity cm³/
 1000S.: 46.00...52.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...120.00
 mind 1000S.: 70.00
 Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.40...3.80
 mm: (2.90...4.30)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1050
 Supply-pump pressure bar: 4.60...5.20
 Shutoff electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1050
 Shutoff electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1250
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1160
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...15.00
 1000s.: (0.00...15.00)
 4th speed 1/min: 1130
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 15.00...55.00
 1000s.: (15.00...55.00)
 5th speed 1/min: 1100
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 46.00...52.00
 1000s.: (43.00...55.00)
 9th speed 1/min: 1050
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 60.50...63.50
 1000s.: (59.00...65.00)
 10th speed 1/min: 900
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 62.00...65.00
 1000s.: (60.00...67.00)
 12th speed 1/min: 750
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 64.50...65.50
 1000s.: (62.00...68.00)
 Shutoff electromagnet Volt: 24
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 62.50...70.50
 1000s.: -
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1050
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 375
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 10.00...12.00
 1000s.: (6.00...16.00)
 Dispersion cm³: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...4.00
 1000s.: (0.00...4.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff electromagnet Volt: 24

Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.2...1.6
Ya mm: 34.8...38.8
Yb mm: 39.9...45.5

Remarks:
: C.D.C. # 390 8208
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 11.07.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R225-18
 Type number : 0 460 426 129
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.5
 mm: +0.02(0.06)

Outlet : 0

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.40...3.80
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.70...4.30
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000S.: 75.00...76.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 10.00...12.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
 Del. quantity cm³/
 1000S.: 52.00...58.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...120.00
 mind 1000S.: 60.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 TD travel mm: 5.00...5.80
 mm: (4.70...6.10)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750

| | | | |
|--|--|---|--|
| TD travel | mm: 3.40...3.80 mm: (2.90...4.30) | Shutoff electromagnet Volt: 12 4th speed 1/min: 500 TD travel mm: 1.30...2.10 mm: (1.00...2.40) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 15.00...45.00 1000s.: (15.00...45.00) 9th speed 1/min: 1050 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 69.50...72.50 1000s.: (68.00...74.00) 10th speed 1/min: 900 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 72.50...75.50 1000s.: (70.50...77.50) 12th speed 1/min: 750 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 75.00...76.00 1000s.: (72.50...78.50) 20th speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm ³ /: 61.50...69.50 1000s.: (59.50...71.50) |
| Supply-pump pressure characteristic: | | | |
| 1st speed | 1/min: 500 | Supply-pump pressure | bar: 2.60...3.20 |
| Shutoff | | electromagnet Volt: 12 | |
| 2nd speed | 1/min: 750 | Supply-pump pressure | bar: 3.70...4.30 |
| Shutoff | | electromagnet Volt: 12 | |
| 3rd speed | 1/min: 1050 | Overflow quantity | cm ³ /10s: (41.70...83.40) |
| Supply-pump | | Shutoff | |
| pressure | bar: 4.90...5.50 | electromagnet Volt: 12 | |
| Shutoff | | Del. quantity cm ³ /: 0.00...3.00 | |
| electromagnet Volt: 12 | | 1000s.: (0.00...3.00) | |
| Overflow quantity at overflow valve: | | | |
| 1st speed | 1/min: 500 | Shutoff | |
| Shutoff | | electromagnet Volt: 12 | |
| Overflow | : 41.70...83.40 | Overflow | : 55.60...139.00 |
| quantity | cm ³ /10s: (41.70...83.40) | quantity | cm ³ /10s: (55.60...139.00) |
| 2nd speed | 1/min: 1050 | | |
| Shutoff | | | |
| electromagnet Volt: 12 | | | |
| Overflow | : 55.60...139.00 | | |
| quantity | cm ³ /10s: (55.60...139.00) | | |
| Delivery-quant. and breakaway char.: | | | |
| 2nd speed | 1/min: 1200 | Shutoff | |
| Shutoff | | electromagnet Volt: 12 | |
| electromagnet Volt: 12 | | Del. quantity cm ³ /: 0.00...3.00 | |
| Del. quantity cm ³ /: 0.00...3.00 | | 1000s.: (0.00...3.00) | |
| 1000s.: (0.00...3.00) | | | |
| 3rd speed | 1/min: 1170 | Shutoff | |
| Shutoff | | electromagnet Volt: 12 | |
| electromagnet Volt: 12 | | Del. quantity cm ³ /: 0.00...15.00 | |
| Del. quantity cm ³ /: 0.00...15.00 | | 1000s.: (0.00...15.00) | |
| 1000s.: (0.00...15.00) | | | |
| 5th speed | 1/min: 1100 | Shutoff | |
| Shutoff | | electromagnet Volt: 12 | |
| electromagnet Volt: 12 | | Del. quantity cm ³ /: 52.00...58.00 | |
| Del. quantity cm ³ /: 52.00...58.00 | | 1000s.: (49.00...61.00) | |
| 1000s.: (49.00...61.00) | | | |
| 8th speed | 1/min: 1130 | | |
| Mech. shutoff: | | | |
| Mech. Abstellung: | | | |
| 1st speed | 1/min: 1050 | Shutoff | |
| Del. quantity cm ³ /: 0.00...3.00 | | electromagnet volt: 12 | |
| 1000s.: (0.00...3.00) | | | |
| Shutoff | | | |
| electromagnet volt: 12 | | | |
| Electr. shutoff: | | | |
| 1st speed | 1/min: 375 | Shutoff | |
| Del. quantity cm ³ /: 0.00...3.00 | | electromagnet Volt: 12 | |
| 1000s.: (0.00...3.00) | | Del. quantity cm ³ /: 10.00...12.00 | |
| | | 1000s.: (6.00...16.00) | |
| Dispersion | cm ³ /: 5.5 | Shutoff | |
| | | electromagnet Volt: 12 | |
| 1000s.: (7.0) | | Del. quantity cm ³ /: 0.00...4.00 | |
| 2nd speed | 1/min: 450 | 1000s.: (0.00...4.00) | |
| Shutoff | | | |
| electromagnet Volt: 12 | | | |
| Del. quantity cm ³ /: 0.00...4.00 | | | |
| 1000s.: (0.00...4.00) | | | |
| Automatic starting fuel delivery: | | | |
| 1st speed | 1/min: 130 | Shutoff | |
| Shutoff | | electromagnet Volt: 12 | |

Del. quantity cm³: 60.00...120.00
1000S.: (60.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 12

Del. quantity cm³: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 0.8...1.2

Ya mm: 34.8...38.8

Yb mm: 40.7...46.3

Remarks:

: C.D.C. # 390 8201

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R225-22
 Type number : 0 460 426 132
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6BTA-590 IND.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.85
 mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
 Setting value mm: 2.40...2.80
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
 Setting value bar: 3.80...4.40
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm³/
 1000S.: 92.00...93.00
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 15.00...21.00
 Shutoff electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 1190
 Del. quantity cm³/
 1000S.: 17.00...23.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...130.00
 mind 1000S.: 70.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 3.00...3.80
 mm: (2.70...4.10)

Shutoff electromagnet Volt: 12

3rd speed 1/min: 900
 TD travel mm: 2.40...2.80
 mm: (1.90...3.30)

Shutoff electromagnet Volt: 12

4th speed 1/min: 750

TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump
 pressure bar: 2.20...2.80
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Supply-pump
 pressure bar: 3.80...4.40
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump
 pressure bar: 4.60...5.20
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 Supply-pump
 pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...15.00
 1000s.: (0.00...15.00)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1190
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.00...23.00
 1000s.: (15.00...25.00)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 75.00...78.00
 1000s.: (73.50...79.50)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 80.50...83.50
 1000s.: (78.50...85.50)
 Shutoff
 electromagnet Volt: 12
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 92.00...93.00
 1000s.: (89.50...95.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 91.00...101.00
 1000s.: (90.00...102.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1100
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 400
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 15.00...21.00
 1000s.: (13.00...23.00)
 2nd speed 1/min: 480
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 70.00...130.00
 1000s.: (70.00...130.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.00...105.00
1000s.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000s.: (70.00...130.00)

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: - |
| KF | mm: 5.1...5.5 |
| Ya | mm: 34.8...38.8 |
| Yb | mm: 41.3...46.7 |

Remarks:

: C.D.C. # 391 7010
Overflow restriction 0.55 mm - Part No.
.303

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 15.06.92
 replaces : 06.11.89
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1350R291-2
 Type number : 0 460 426 134
 Customer Part-No. :

Customer-specific information
 Customer : MAN

Engine : D 0826 GF LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.35
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

H04

Setting value mm: 3.10...3.50
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 5.90...6.50
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 99.00...100.00
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 19.00...25.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1400
 Del. quantity cm³/
 1000S.: 67.00...73.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm³/: 70.00...130.00
 mind 1000S.: 70.00
 Shutoff
 electromagnet Volt: 24

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1000
 Charge press hPa: 24
 Inj.-qty. cm³/
 difference 1000S.: 44.00...52.00*
 Shutoff
 electromagnet Volt: 24
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1000

TD-travel difference mm: 0.90...1.10*
 Shutoff electromagnet Volt: 24
 SP press.-dif.measurement pompa di mandata (FP)
 1.Speed 1/min: 1000
 Supply pump pressure difference bar: 0.10...0.30#
 Shutoff electromagnet Volt: 24

 Inspection-pump test specifications
 Test specifications in parentheses

 Timing-device characteristic:

 2nd speed 1/min: 1100
 TD travel mm: 4.00...4.80
 mm: (3.70...5.10)
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1000
 TD travel mm: 3.10...3.50
 mm: (2.60...4.00)
 Shutoff electromagnet Volt: 24
 4th speed 1/min: 800
 TD travel mm: 0.90...1.70
 mm: (0.60...2.00)
 Shutoff electromagnet Volt: 24

 Supply-pump pressure characteristic:

 1st speed 1/min: 600
 Supply-pump pressure bar: 3.90...4.50
 Shutoff electromagnet Volt: 24
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 5.90...6.50
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1350
 Supply-pump pressure bar: 7.50...8.10
 Shutoff electromagnet Volt: 24

 Overflow quantity at overflow valve:

 1st speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1350

Shutoff electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

 Delivery-quant. and breakaway char.:

 2nd speed 1/min: 1550
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 1440
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 20.00...60.00
 1000s.: (20.00...60.00)
 4th speed 1/min: 1490
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 0.00...20.00
 1000s.: (0.00...20.00)
 5th speed 1/min: 1400
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 67.00...73.00
 1000s.: (65.50...74.50)
 9th speed 1/min: 1350
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 93.00...96.00
 1000s.: (91.50...97.50)
 11th speed 1/min: 800
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 96.00...100.00
 1000s.: (94.50...101.50)
 12th speed 1/min: 1000
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 99.00...100.00
 1000s.: (97.00...102.00)
 20th speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Del. quantity cm³: 93.00...97.00
 1000s.: (91.50...98.50)

 Mech. shutoff:
 Mech. Abstellung:

 1st speed 1/min: 1350
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff electromagnet volt: 24

 Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 19.00...25.00
1000S.: (17.00...27.00)
Dispersion cm³: 3.5
1000S.: (4.0)
4th speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 0.00...4.00
1000S.: (0.00...4.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm³/ : 20.00..22.00#
difference 1000S.: (20.00...22.00)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Inj.-qty. cm³/ : 44.00..52.00*
difference 1000S.: (44.00...52.00)
Shutoff
electromagnet Volt: 24
5th speed 1/min: 1000
Inj.-qty. cm³/ : 2.00...8.00'
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 24

TD-travel dif.measurement:

correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.90...1.10*
difference mm: (0.90...1.10)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD-travel : 0.30...1.10'
difference mm: (0.30...1.10)
Shutoff
electromagnet Volt: 24

SP press.-dif.measurement:

pompa di mandata (FP):
1st speed 1/min: 1000
Supply pump-
pressure : 0.10...0.30#
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 24

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 105.00...135.00
1000S.: (105.00...135.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 90.00...110.00
1000S.: (90.00...110.00)
4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³: 70.00...130.00
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: - |
| KF | mm: 5.1...5.5 |
| MS | mm: 0.8...1.2 |
| SVS max. | mm: 4.2 |
| XK | mm: 17.0...19.0 |
| XL | mm: 11.9...15.3 |
| Ya | mm: 37.4...40.4 |
| Yb | mm: 41.9...47.3 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 10.06.92
 replaces : 12.07.89
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1150R225-23
 Type number : 0 460 426 143
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BT -5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.3
 mm: +0.02(0.06)
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.40...3.80
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.50...4.10
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
 Del. quantity cm³/
 1000S.: 71.50...72.50
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 8.00...14.00
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1190
 Del. quantity cm³/
 1000S.: 50.00...56.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 60.00...120.00
 mind 1000S.: 60.00
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 5.50...6.30
 mm: (5.20...6.60)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 TD travel mm: 3.40...3.80
 mm: (2.90...4.30)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1150
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1220
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1190

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.00...56.00
 1000S.: (47.00...59.00)
 9th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 66.50...69.50
 1000S.: (65.00...71.00)
 Shutoff
 electromagnet Volt: 12
 12th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 71.50...72.50
 1000S.: (69.00...75.00)
 Shutoff
 electromagnet Volt: 12
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 56.50...64.50
 1000S.: -
 Delivery-quant. and breakaway char.:
 Inj.-qty.values, temp.-compensated
 temperatura
 Shutoff
 electromagnet Volt: 12
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1150
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: - |
| KF | mm: 5.0...5.4 |
| MS | mm: 0.8...1.2 |
| XK | mm: 20.2...22.2 |
| XL | mm: 11.5...14.9 |
| Ya | mm: 35.8...37.8 |
| Yb | mm: 41.7...47.1 |

Remarks:

: C.D.C. # 391 8282
: C.D.C. # 391 6949

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R381-8
Type number : 0 460 426 200
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9 IND.
Power KW: 64
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.5
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.30...3.70
Shutoff electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 49.50...50.50
Shutoff electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 17.00...23.00
Shutoff electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm³/
1000S.: 33.50...39.50
Shutoff electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...90.00
mind 1000S.: 50.00
Shutoff electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.90...6.70
mm: (5.60...7.00)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.30...3.70
 mm: (2.80...4.20)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.10...5.70
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:
 1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1200
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1160
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...45.00
 1000S.: (15.00...45.00)
 5th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 33.50...39.50
 1000S.: (30.50...42.50)
 12th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 49.50...50.50
 1000S.: (47.00...53.00)
 15th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 47.50...50.50
 1000S.: (45.50...52.50)
 17th speed 1/min: 600
 Shutoff
 electromagnet volt: 24
 Del. quantity cm³/: 45.00...48.00
 1000H.: (43.00...50.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 32.50...40.50
 1000S.: (30.50...42.50)

Mech. shutoff:
Mech. Abstellung:
 1st speed 1/min: 1100
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24

Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 17.00...23.00
 1000S.: (15.00...25.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 480
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:
 2nd speed 1/min: 375

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...40.00
1000s.: (20.00...40.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...90.00
1000s.: (50.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4

Remarks:
: C.D.C # 392 2411
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 16.06.92
 replaces : 19.07.88
 Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R308
 Type number : 0 460 484 015
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : M708 EA 17.0 TIPO

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Setting value mm: 5.10...5.50
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 5.30...5.90
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Del. quantity cm³/
 1000S.: 29.10...30.10
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/
 1000S.: 10.00...14.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.5
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
 Del. quantity cm³/
 1000S.: 22.00...28.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 37.00...63.00
 mind 1000S.: 37.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1500
 Charge press hPa: 12
 Inj.-qty. cm³/
 difference 1000S.: 6.00...12.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1500
 TD-travel
 difference mm: 0.70...0.90
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300
 TD travel mm: 8.60...9.40
 mm: (8.30...9.70)
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1500
 TD travel mm: 5.10...5.50
 mm: (4.60...6.00)
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 1.60...2.40
 mm: (1.10...2.90)
 Shutoff electromagnet Volt: 12
 6th speed 1/min: 2000
 TD travel mm: 7.20...8.00
 mm: -
 Shutoff electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
 Supply-pump pressure bar: 7.20...7.80
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1500
 Supply-pump pressure bar: 5.30...5.90
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 600
 Supply-pump pressure bar: 3.10...3.70
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 2300
 Shutoff electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
 Shutoff electromagnet Volt: 12

Del. quantity cm³: 0.00...1.60
 1000s.: (0.00...1.60)
 3rd speed 1/min: 2700
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 3.50...11.50
 1000s.: (2.50...12.50)
 5th speed 1/min: 2500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 22.00...28.00
 1000s.: (19.00...31.00)
 9th speed 1/min: 2300
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 29.80...32.20
 1000s.: (28.50...33.50)
 12th speed 1/min: 1500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 29.10...30.10
 1000s.: (27.30...31.90)
 15th speed 1/min: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 29.50...31.90
 1000s.: (28.40...33.00)
 20th speed 1/min: 600
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 29.50...32.50
 1000s.: (27.50...34.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 10.00...14.00
 1000s.: (7.00...17.00)
 Dispersion cm³: 2.5
 1000s.: (3.0)
 2nd speed 1/min: 550
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 450
 Shutoff electromagnet Volt: 12
 Del. quantity cm³: 0.00...6.00
 1000s.: (-2.50...8.50)

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1500
Inj.-qty. cm³: 6.00...12.00
difference 1000s.: (5.00...13.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.70...0.90
difference mm: (0.70...0.90)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 43.00...53.00
1000s.: (43.00...53.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 32.00...42.00
1000s.: (32.00...42.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 37.00...63.00
1000s.: (37.00...63.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.6...2.0

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
 Edition : 03.06.92
 replaces : 03.10.86
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2075R126
 Type number : 0 460 494 121
 Customer Part-No. :

Customer-specific information
 Customer : PSA

Engine : XD 3S

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 800
 Setting value mm: 5.80...6.20
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 800
 Setting value bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 53.50...54.50

Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 2.0
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 40.00...41.00

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 20.00...24.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 2.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
 Charge press hPa: 800
 Del. quantity cm³/
 1000S.: 26.50...32.50

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³: 67.00...113.00
 mind 1000S.: 67.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 7.80...8.60
 mm: (7.00...9.40)

Shutoff
 electromagnet Volt: 12

| | | | |
|--------------------------------------|--|---------------------------------|-----------------|
| 3rd speed | 1/min: 1500 | 1nd speed | 1/min: 750 |
| Charge press | hPa: 800 | Charge-air pressure-setting | |
| TD travel | mm: 5.80...6.20 | point | hPa: 300 |
| | mm: (5.00...7.00) | Shutoff | |
| Shutoff | | electromagnet Volt: | 12 |
| electromagnet Volt: | 12 | Del. quantity cm ³ : | 47.50...48.50 |
| 4th speed | 1/min: 750 | 1000S.: | (43.00...53.00) |
| Charge press | hPa: 800 | 2nd speed | 1/min: 2600 |
| TD travel | mm: 0.80...1.60 | Charge press. | hPa: 800 |
| | mm: (0.00...2.40) | Shutoff | |
| Shutoff | | electromagnet Volt: | 12 |
| electromagnet Volt: | 12 | Del. quantity cm ³ : | 0.00...3.00 |
| 5th speed | 1/min: 1000 | 1000S.: | (0.00...3.00) |
| Charge press. | hPa: 800 | 5th speed | 1/min: 2300 |
| TD travel | mm: 2.50...3.30 | Charge press. | hPa: 800 |
| | mm: - | Shutoff | |
| Shutoff | | electromagnet Volt: | 12 |
| electromagnet Volt: | 12 | Del. quantity cm ³ : | 26.50...32.50 |
| Supply-pump pressure characteristic: | | 1000S.: | (21.50...37.50) |
| 1st speed | 1/min: 750 | 8th speed | 1/min: 2200 |
| Charge press. | hPa: 800 | Charge press. | hPa: 800 |
| Supply-pump | | Shutoff | |
| pressure | bar: 3.40...4.00 | electromagnet Volt: | 12 |
| | bar: - | Del. quantity cm ³ : | 40.50...46.50 |
| Shutoff | | 1000S.: | (35.50...51.50) |
| electromagnet Volt: | 12 | 9th speed | 1/min: 2000 |
| 2nd speed | 1/min: 1500 | Charge press. | hPa: 800 |
| Charge press. | hPa: 800 | Shutoff | |
| Supply-pump | | electromagnet Volt: | 12 |
| pressure | bar: 5.60...6.20 | Del. quantity cm ³ : | 51.20...53.20 |
| | bar: - | 1000S.: | (47.70...56.70) |
| Shutoff | | 12th speed | 1/min: 1500 |
| electromagnet Volt: | 12 | Charge press. | hPa: 800 |
| 3rd speed | 1/min: 2000 | Shutoff | |
| Charge press. | hPa: 800 | electromagnet Volt: | 12 |
| Supply-pump | | Del. quantity cm ³ : | 53.50...54.50 |
| pressure | bar: 7.10...7.70 | 1000S.: | (50.00...58.00) |
| | bar: - | 18th speed | 1/min: 500 |
| Shutoff | | Shutoff | |
| electromagnet Volt: | 12 | electromagnet Volt: | 12 |
| Overflow | : 41.70...83.40 | Del. quantity cm ³ : | 40.00...41.00 |
| quantity | cm ³ /10s: (41.70...83.40) | 1000S.: | (35.50...45.50) |
| 2nd speed | 1/min: 2000 | 20th speed | 1/min: 1000 |
| Charge press. | hPa: 800 | Charge press. | hPa: 800 |
| Shutoff | | Shutoff | |
| electromagnet Volt: | 12 | electromagnet Volt: | 12 |
| Overflow | : 55.60...139.00 | Del. quantity cm ³ : | 50.50...53.50 |
| quantity | cm ³ /10s: (55.60...139.00) | 1000S.: | (49.00...55.00) |
| Delivery-quant. and breakaway char.: | | Mech. shutoff: | |
| | | Mech. Abstellung: | |
| | | 1st speed | 1/min: 2075 |
| | | Del. quantity cm ³ : | 0.00...3.00 |
| | | 1000S.: | (0.00...3.00) |
| | | Electr. shutoff: | |
| | | 1st speed | 1/min: 350 |

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 20.00...24.00
1000s.: (14.00...30.00)

Dispersion cm³/: 2.0
1000s.: (3.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

3rd speed 1/min: 400

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 8.00...12.00
1000s.: (2.00...18.00)

Automatic starting fuel delivery:

1st speed 1/min: 230

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.00...100.00
1000s.: (60.00...100.00)

2nd speed 1/min: 330

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 67.00...113.00
1000s.: (67.00...113.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: K1 |
| KF | mm: 5.4...5.7 |
| MS | mm: 1.2...1.4 |
| SVS max. | mm: 4.6 |
| XK | mm: 20.2...22.2 |
| XL | mm: 9.7...13.1 |
| Ya | mm: 19.1...23.1 |
| Yb | mm: 68.7...85.8 |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 03.06.92
replaces : 03.10.86
Calibrating oil : ISO-4113

Injection pump : VE4/9F2125R126-1
Type number : 0 460 494 123
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XD 3S AUT.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 5.80...6.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 5.60...6.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/
1000s.: 53.50...54.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.0
1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000s.: 40.00...41.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000s.: 17.00...21.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2350
Charge press hPa: 800
Del. quantity cm³/
1000s.: 26.50...32.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 67.00...113.00
mind 1000s.: 67.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 7.80...8.60
mm: (7.00...9.40)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
 Charge press hPa: 800
 TD travel mm: 5.80...6.20
 mm: (5.00...7.00)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 Charge press hPa: 800
 TD travel mm: 0.80...1.60
 mm: (0.00...2.40)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1000
 Charge press. hPa: 800
 TD travel mm: 2.50...3.30
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 750
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 3.40...4.00
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 5.60...6.20
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 7.10...7.70
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 750
 Charge-air pressure-setting
 point hPa: 300

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 47.50...48.50
 1000s.: (43.00...53.00)
 3rd speed 1/min: 2650
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 2350
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 26.50...32.50
 1000s.: (21.50...37.50)
 8th speed 1/min: 2250
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.50...46.50
 1000s.: (35.50...51.50)
 9th speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 51.20...53.20
 1000s.: (47.70...56.70)
 10th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 50.50...53.50
 1000s.: (49.00...55.00)
 12th speed 1/min: 1500
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³: 53.50...54.50
 1000s.: (50.00...58.00)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 40.00...41.00
 1000s.: (35.50...45.50)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 2125
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Electr. shutoff:
 1st speed 1/min: 350
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...21.00
1000s.: (11.00...27.00)
Dispersion cm³/: 2.0
1000s.: (3.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...9.00
1000s.: (-1.00...15.00)
3rd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000s.: (60.00...100.00)

2nd speed 1/min: 330
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...113.00
1000s.: (67.00...113.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: K1 |
| KF | mm: 5.4...5.7 |
| MS | mm: 1.2...1.4 |
| SVS max. | mm: 4.6 |
| XK | mm: 20.2...22.2 |
| XL | mm: 9.4...12.8 |
| Ya | mm: 19.1...23.1 |
| Yb | mm: 66.5...83.1 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
 Edition : 03.06.92
 replaces : 22.08.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2400R138
 Type number : 0 460 494 131
 Customer Part-No. :

Customer-specific information
 Customer : VW

Engine : 086-1.6L (SG)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Setting value mm: 2.90...3.30
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 4.60...5.20
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Del. quantity cm³/
 1000S.: 31.70...32.70
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 475
 Del. quantity cm³/
 1000S.: 6.00...10.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2600
 Del. quantity cm³/
 1000S.: 12.00...16.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 35.00...85.00
 mind 1000S.: 35.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
 TD travel mm: 6.10...6.90
 mm: (5.80...7.20)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 TD travel mm: 2.90...3.30
 mm: (2.40...3.80)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 TD travel mm: 1.30...2.10
 mm: (1.00...2.40)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

| | | | |
|---|------------------|--|---|
| 1st speed | 1/min: 600 | | Shutoff |
| Supply-pump | | | electromagnet Volt: 12 |
| pressure | bar: 2.40...3.00 | | Shutoff |
| Shutoff | | | electromagnet volt: 12 |
| electromagnet Volt: 12 | | | 20th speed 1/min: 600 |
| 2nd speed | 1/min: 1500 | | Shutoff |
| Supply-pump | | | electromagnet Volt: 12 |
| pressure | bar: 4.60...5.20 | | Del. quantity cm ³ : 21.50...24.50 |
| Shutoff | | | 1000s.: (20.00...26.00) |
| electromagnet Volt: 12 | | | Mech. shutoff: |
| 3rd speed | 1/min: 2400 | | Electr. shutoff: |
| Supply-pump | | | 1st speed 1/min: 475 |
| pressure | bar: 6.90...7.50 | | Del. quantity cm ³ : 0.00...3.00 |
| Shutoff | | | 1000s.: (0.00...3.00) |
| electromagnet Volt: 12 | | | Idle delivery: |
| Overflow quantity at overflow valve: | | | 1st speed 1/min: 475 |
| 1st speed | 1/min: 600 | | Shutoff |
| Shutoff | | | electromagnet Volt: 12 |
| electromagnet Volt: 12 | | | Del. quantity cm ³ : 6.00...10.00 |
| Overflow | : 41.70...83.40 | | 1000s.: (4.00...12.00) |
| quantity cm ³ /10s: (27.80...97.30) | | | Dispersion cm ³ : 2.0 |
| 2nd speed | 1/min: 2400 | | 1000s.: (3.0) |
| Shutoff | | | 2nd speed 1/min: 650 |
| electromagnet Volt: 12 | | | Shutoff |
| Overflow | : 55.50...138.90 | | electromagnet Volt: 12 |
| quantity cm ³ /10s: (41.70...152.90) | | | Del. quantity cm ³ : 0.00...7.60 |
| Delivery-quant. and breakaway char.: | | | 1000s.: (0.00...7.60) |
| 3rd speed | 1/min: 2800 | | 4th speed 1/min: 1200 |
| Shutoff | | | Shutoff |
| electromagnet Volt: 12 | | | electromagnet Volt: 12 |
| Del. quantity cm ³ : 0.00...3.00 | | | Del. quantity cm ³ : 0.00...5.00 |
| 1000s.: (0.00...3.00) | | | 1000s.: (0.00...5.00) |
| 5th speed | 1/min: 2600 | | Automatic starting fuel delivery: |
| Shutoff | | | 1st speed 1/min: 400 |
| electromagnet Volt: 12 | | | Shutoff |
| Del. quantity cm ³ : 12.00...16.00 | | | electromagnet Volt: 12 |
| 1000s.: (10.00...18.00) | | | Del. quantity cm ³ : 18.00...68.00 |
| 8th speed | 1/min: 2525 | | 1000s.: (18.00...68.00) |
| Shutoff | | | 2nd speed 1/min: 500 |
| electromagnet Volt: 12 | | | Shutoff |
| Del. quantity cm ³ : 18.50...28.50 | | | electromagnet Volt: 12 |
| 1000s.: (17.50...29.50) | | | Del. quantity cm ³ : 3.50...23.50 |
| 9th speed | 1/min: 2400 | | 1000s.: (3.50...23.50) |
| Shutoff | | | Shutoff |
| electromagnet Volt: 12 | | | electromagnet Volt: 12 |
| Del. quantity cm ³ : 27.00...29.00 | | | Shutoff electromagnet: |
| 1000s.: (25.80...30.20) | | | Cut-in |
| Shutoff | | | min voltage : 10.0 |
| electromagnet Volt: 12 | | | Rated voltage : 12.0 |
| 12th speed | 1/min: 1500 | | |
| Shutoff | | | |
| electromagnet Volt: 12 | | | |
| Del. quantity cm ³ : 31.70...32.70 | | | |
| 1000s.: (30.00...34.40) | | | |

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: 3.1...3.5 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.2...1.6 |
| SVS max. | mm: 2.3 |
| FH | mm: 1.8...2.4 |
| XK | mm: 17.0...19.0 |
| XL | mm: 9.8...13.2 |
| Ya | mm: 38.6...40.6 |
| Yb | mm: 50.4...63.3 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 04.06.92
replaces : 16.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R141
Type number : 0 460 494 132
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : X8/43

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 4.30...4.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm³/
1000S.: 29.20...30.20
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 390
Del. quantity cm³/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000S.: 11.00...17.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 55.00...95.00
mind 1000S.: 55.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 9.00...17.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300

| | | | |
|--|--|--|--|
| TD travel | mm: 7.10...7.90 mm: (6.80...8.20) | Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 TD travel mm: 4.30...4.70 mm: (3.80...5.20) | Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 20.50...27.50 9th speed 1/min: 2250 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 30.90...33.50 1000S.: (29.70...34.70) |
| Shutoff electromagnet Volt: 12 4th speed 1/min: 800 TD travel mm: 1.70...2.50 mm: (1.40...2.80) | Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: 1st speed 1/min: 2300 Supply-pump pressure bar: 7.40...8.00 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1500 Supply-pump pressure bar: 5.60...6.20 Shutoff electromagnet Volt: 12 3rd speed 1/min: 400 Supply-pump pressure bar: 2.80...3.40 Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 28.70...31.70 1000S.: (27.70...32.70) 12th speed 1/min: 1500 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 29.20...30.20 1000S.: (27.20...32.20) 20th speed 1/min: 600 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 29.50...33.50 1000S.: (28.50...34.50) | Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm ³ : 0.00...3.00 1000S.: (0.00...3.00) |
| Overflow quantity at overflow valve: 1st speed 1/min: 600 Shutoff electromagnet Volt: 12 Overflow : 41.70...83.40 quantity cm ³ /10s: (41.70...83.40) 2nd speed 1/min: 2250 Shutoff electromagnet Volt: 12 Overflow : 55.60...139.00 quantity cm ³ /10s: (55.60...139.00) | Idle delivery: 1st speed 1/min: 390 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 9.00...13.00 1000S.: (7.00...15.00) Dispersion cm ³ : 2.5 1000S.: (2.5) 2nd speed 1/min: 440 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 1.00...7.00 1000S.: (0.50...7.50) 4th speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 0.00...3.00 1000S.: (0.00...3.00) | Load-dependent start of delivery: Inj.-qty.dif.measurement: 3rd speed 1/min: 1500 Inj.-qty. cm ³ : 9.00...17.00 difference 1000S.: (9.00...17.00) Shutoff electromagnet Volt: 12 | |
| Delivery-quant. and breakaway char.: 3rd speed 1/min: 2600 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 2.50...10.50 1000S.: (1.50...11.50) 5th speed 1/min: 2500 Shutoff electromagnet Volt: 12 Del. quantity cm ³ : 11.00...17.00 1000S.: (9.00...19.00) 8th speed 1/min: 2400 | | | |

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.60...0.80
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000s.: (45.00...75.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...46.00
1000s.: (26.00...46.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.1...3.4 |
| KF | mm: 5.7...6.0 |
| MS | mm: 1.7...1.9 |
| SVS max. | mm: 2.8 |
| XK | mm: 20.2...22.2 |
| XL | mm: 10.3...13.7 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 42.9...51.5 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
 Edition : 04.06.92
 replaces : 09.02.88
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R149
 Type number : 0 460 494 138
 Customer Part-No. :

Customer-specific information
 Customer : VW

Engine : 3G-T-1.6L (3G)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C .
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.50...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 750
 Setting value mm: 3.80...4.20
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 750
 Setting value bar: 4.60...5.20

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 750
 Del. quantity cm³/
 1000S.: 43.50...44.50

Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 2.5
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 23.50...24.50

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 475
 Del. quantity cm³/
 1000S.: 6.00...10.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 2.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2525
 Charge press hPa: 750
 Del. quantity cm³/
 1000S.: 10.00...14.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³: 35.00...85.00
 mind 1000S.: 35.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
 Charge press hPa: 750
 TD travel mm: 6.10...6.90
 mm: (5.80...7.20)
 Shutoff
 electromagnet Volt: 12

| | | | |
|--------------------------------------|--|--|--|
| 3rd speed | 1/min: 1500 | | Shutoff |
| Charge press | hPa: 750 | | electromagnet Volt: 12 |
| TD travel | mm: 3.80...4.20 | | Del. quantity cm ³ /: 0.00...3.00 |
| | mm: (3.30...4.70) | | 1000S.: (0.00...3.00) |
| Shutoff | | | 5th speed 1/min: 2525 |
| electromagnet | Volt: 12 | | Charge press. hPa: 750 |
| 4th speed | 1/min: 1000 | | Shutoff |
| Charge press | hPa: 750 | | electromagnet Volt: 12 |
| TD travel | mm: 1.80...2.60 | | Del. quantity cm ³ /: 10.00...14.00 |
| | mm: (1.50...2.90) | | 1000S.: (8.00...16.00) |
| Shutoff | | | 8th speed 1/min: 2425 |
| electromagnet | Volt: 12 | | Charge press. hPa: 750 |
| Supply-pump pressure characteristic: | | | Shutoff |
| 1st speed | 1/min: 600 | | electromagnet Volt: 12 |
| Charge press. | hPa: 750 | | Del. quantity cm ³ /: 22.00...32.00 |
| Supply-pump | | | 1000S.: (21.00...33.00) |
| pressure | bar: 2.50...3.10 | | 9th speed 1/min: 2250 |
| Shutoff | | | Charge press. hPa: 750 |
| electromagnet | Volt: 12 | | Shutoff |
| 2nd speed | 1/min: 1500 | | electromagnet Volt: 12 |
| Charge press. | hPa: 750 | | Del. quantity cm ³ /: 38.00...40.00 |
| Supply-pump | | | 1000S.: (36.80...41.20) |
| pressure | bar: 4.60...5.20 | | 10th speed 1/min: 1500 |
| Shutoff | | | Charge press. hPa: 750 |
| electromagnet | Volt: 12 | | Shutoff |
| 3rd speed | 1/min: 2250 | | electromagnet Volt: 12 |
| Charge press. | hPa: 750 | | Del. quantity cm ³ /: 43.50...44.50 |
| Supply-pump | | | 1000S.: (41.80...46.20) |
| pressure | bar: 6.50...7.10 | | 18th speed 1/min: 600 |
| Shutoff | | | Shutoff |
| electromagnet | Volt: 12 | | electromagnet Volt: 12 |
| Overflow quantity at overflow valve: | | | Del. quantity cm ³ /: 23.50...24.50 |
| 1st speed | 1/min: 600 | | 1000S.: (21.00...27.00) |
| Shutoff | | | 20th speed 1/min: 600 |
| electromagnet | Volt: 12 | | Charge press. hPa: 750 |
| Overflow | : 41.70...83.40 | | Shutoff |
| quantity | cm ³ /10s: (27.80...97.30) | | electromagnet Volt: 12 |
| 2nd speed | 1/min: 2250 | | Del. quantity cm ³ /: 32.50...35.50 |
| Charge press. | hPa: 750 | | 1000S.: (31.00...37.00) |
| Shutoff | | | Mech. shutoff: |
| electromagnet | Volt: 12 | | Electr. shutoff: |
| Overflow | : 55.60...139.00 | | 1st speed 1/min: 475 |
| quantity | cm ³ /10s: (41.70...152.90) | | Del. quantity cm ³ /: 0.00...3.00 |
| Delivery-quant. and breakaway char.: | | | 1000S.: (0.00...3.00) |
| 1nd speed | 1/min: 1000 | | Idle delivery: |
| Charge-air pressure-setting | | | 1st speed 1/min: 475 |
| point | hPa: 300 | | Shutoff |
| Shutoff | | | electromagnet Volt: 12 |
| electromagnet | Volt: 12 | | Del. quantity cm ³ /: 6.00...10.00 |
| Del. quantity | cm ³ /: 33.50...34.50 | | 1000S.: (4.00...12.00) |
| | 1000S.: (31.00...37.00) | | Dispersion cm ³ /: 2.0 |
| 3rd speed | 1/min: 2750 | | 1000S.: (3.0) |
| Charge press. | hPa: 750 | | 2nd speed 1/min: 1200 |
| | | | Shutoff |
| | | | electromagnet Volt: 12 |

Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...72.00
1000s.: (22.00...72.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000s.: (10.00...30.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.1...1.5 |
| SVS max. | mm: 3.8 |
| XK | mm: 18.4...20.4 |
| XL | mm: 8.6...12.0 |
| Ya | mm: 38.6...40.6 |
| Yb | mm: 50.4...63.3 |

Remarks:

:

:

Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
 Edition : 04.06.92
 replaces : 22.08.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R153
 Type number : 0 460 494 141
 Customer Part-No. :

Customer-specific information
 Customer : RNUR

Engine : J8S - 709

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 inlet temp. °C: 130...133

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
 Charge press. hPa: 800
 Setting value mm: 4.00...4.40
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
 Charge press hPa: 800
 Setting value bar: 5.10...5.70
 Shutoff
 electromagnet Volt: 12
 Full-load del. with charge press.:
 Speed 1/min: 1400
 Charge press. hPa: 800
 Del. quantity cm³/
 1000s.: 47.20...48.20
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000s.: (3.0)

Full-load del. w/out charge press.:
 Speed 1/min: 600
 Del. quantity cm³/
 1000s.: 37.00...38.00
 Shutoff
 electromagnet Volt: 12
 Low-idle speed regulation
 Speed 1/min: 425
 Del. quantity cm³/
 1000s.: 7.00...11.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.5
 1000s.: (3.0)

Full-load speed regulation
 Speed 1/min: 2400
 Charge press hPa: 800
 Del. quantity cm³/
 1000s.: 23.00...29.00

Start:
 Speed 1/min: 100
 Del. quantity cm³/: 60.00...100.00
 mind 1000s.: 60.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 6.20...7.00
 mm: (6.20...7.00)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 800
 TD travel mm: 4.00...4.40
 mm: (3.50...4.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 Charge press hPa: 800
 TD travel mm: 1.90...2.70
 mm: (1.60...3.00)
 Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1800
 Charge press. hPa: 800
 TD travel mm: 5.70...6.50
 mm: (5.40...6.80)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 600
 Supply-pump
 pressure bar: 2.60...3.20
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 5.10...5.70
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 6.90...7.50
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)
 Delivery-quant. and breakaway char.:
 1nd speed 1/min: 700

Charge-air pressure-setting point hPa: 200
 LDA-stroke mm: 4.5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 41.00...42.00
 1000s.: (38.50...44.50)
 2nd speed 1/min: 2700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 2500
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.50...17.50
 1000s.: (2.50...17.50)
 5th speed 1/min: 2400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.00...29.00
 1000s.: (22.00...30.00)
 9th speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.40...45.40
 1000s.: (42.10...46.70)
 12th speed 1/min: 1400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 47.00...48.00
 1000s.: (45.20...49.80)
 18th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...38.00
 1000s.: (34.50...40.50)
 20th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.90...47.90
 1000s.: (43.40...49.40)

Mech. shutoff:
 Electr. shutoff:
 1st speed 1/min: 425
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 425

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 7.00...11.00
1000s.: (5.00...13.00)
Dispersion cm³: 2.5
1000s.: (3.0)
2nd speed 1/min: 660
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 520
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 3.00...7.00
1000s.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 40.00...100.00
1000s.: (40.00...100.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 20.00...40.00
1000s.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.7...6.0 |
| MS | mm: 1.4...1.6 |
| SVS max. | mm: 3.6 |
| XK | mm: 17.0...19.0 |
| XL | mm: 10.3...13.7 |
| Ya | mm: 38.8...42.8 |
| Yb | mm: 34.1...43.9 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 05.06.92
replaces : 04.02.87
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R170
Type number : 0 460 494 152
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 162T-1.6L Turbo

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 42.50...43.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 25.00...26.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
Charge press hPa: 750
Del. quantity cm³/
1000S.: 6.00...10.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm³/
1000S.: 13.00...19.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Charge press hPa: 750
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250

| | | | |
|--------------------------------------|--|---------------------------------|-----------------|
| Charge press | hPa: 750 | 1nd speed | 1/min: 900 |
| TD travel | mm: 6.40...7.20 | Charge-air pressure-setting | |
| | mm: (6.00...7.60) | point | hPa: 300 |
| Shutoff | | Shutoff | |
| electromagnet | Volt: 12 | electromagnet | Volt: 12 |
| 3rd speed | 1/min: 1500 | Del. quantity cm ³ : | 36.00...37.00 |
| Charge press | hPa: 750 | 1000s.: | (33.00...39.00) |
| TD travel | mm: 3.80...4.20 | 3rd speed | 1/min: 2650 |
| | mm: (3.20...4.80) | Charge press. | hPa: 750 |
| Shutoff | | Shutoff | |
| electromagnet | Volt: 12 | electromagnet | Volt: 12 |
| 4th speed | 1/min: 900 | Del. quantity cm ³ : | 0.00...6.00 |
| Charge press | hPa: 750 | 1000s.: | (0.00...6.00) |
| TD travel | mm: 1.60...2.40 | 5th speed | 1/min: 2525 |
| | mm: (1.20...2.80) | Charge press. | hPa: 750 |
| Shutoff | | Shutoff | |
| electromagnet | Volt: 12 | electromagnet | Volt: 12 |
| Supply-pump pressure characteristic: | | Del. quantity cm ³ : | 13.00...19.00 |
| 1st speed | 1/min: 600 | 1000s.: | (12.00...20.00) |
| Charge press. | hPa: 750 | 8th speed | 1/min: 2450 |
| Supply-pump | | Charge press. | hPa: 750 |
| pressure | bar: 2.70...3.30 | Shutoff | |
| | bar: (2.50...3.50) | electromagnet | Volt: 12 |
| Shutoff | | Del. quantity cm ³ : | 22.00...32.00 |
| electromagnet | Volt: 12 | 1000s.: | (21.00...33.00) |
| 2nd speed | 1/min: 1500 | 9th speed | 1/min: 2250 |
| Charge press. | hPa: 750 | Charge press. | hPa: 750 |
| Supply-pump | | Shutoff | |
| pressure | bar: 4.80...5.40 | electromagnet | Volt: 12 |
| | bar: (4.60...5.60) | Del. quantity cm ³ : | 35.00...37.00 |
| Shutoff | | 1000s.: | (33.80...38.20) |
| electromagnet | Volt: 12 | 12th speed | 1/min: 1500 |
| 3rd speed | 1/min: 2250 | Charge press. | hPa: 750 |
| Charge press. | hPa: 750 | Shutoff | |
| Supply-pump | | electromagnet | Volt: 12 |
| pressure | bar: 6.70...7.30 | Del. quantity cm ³ : | - |
| | bar: (6.50...7.50) | 1000s.: | (40.80...45.20) |
| Shutoff | | 18th speed | 1/min: 600 |
| electromagnet | Volt: 12 | Shutoff | |
| Overflow quantity at overflow valve: | | electromagnet | Volt: 12 |
| 1st speed | 1/min: 600 | Del. quantity cm ³ : | 25.00...26.00 |
| Charge press. | hPa: 750 | 1000s.: | (23.30...27.70) |
| Shutoff | | 20th speed | 1/min: 600 |
| electromagnet | Volt: 12 | Charge press. | hPa: 750 |
| Overflow | : 41.70...83.40 | Shutoff | |
| quantity | cm ³ /10s: (27.80...97.30) | electromagnet | Volt: 12 |
| 2nd speed | 1/min: 2250 | Del. quantity cm ³ : | 35.50...38.50 |
| Charge press. | hPa: 750 | 1000s.: | (34.00...40.00) |
| Shutoff | | Mech. shutoff: | |
| electromagnet | Volt: 12 | Electr. shutoff: | |
| Overflow | : 55.60...138.90 | 1st speed | 1/min: 415 |
| quantity | cm ³ /10s: (41.70...152.90) | Del. quantity cm ³ : | 0.00...3.00 |
| Delivery-quant. and breakaway char.: | | 1000s.: | (0.00...3.00) |
| | | Idle delivery: | |
| | | 1st speed | 1/min: 415 |

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000s.: (4.00...12.00)

2nd speed 1/min: 1000

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 400

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 29.50...79.50
1000s.: (29.50...79.50)

2nd speed 1/min: 500

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 17.50...37.50
1000s.: (17.50...37.50)

4th speed 1/min: 100

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000s.: (35.00...85.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: - |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.1...1.5 |
| SVS max. | mm: 3.0 |
| XK | mm: 17.0...19.0 |
| XL | mm: 8.4...11.8 |

Remarks:

:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
 Edition : 04.06.92
 replaces : 22.08.89
 Calibrating oil : ISC-4113

Injection pump : VE4/9F2200R153-1
 Type number : 0 460 494 156
 Customer Part-No. :

Customer-specific information
 Customer : RNUR

Engine : J8S - 701 CA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : motormah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
 Charge press. hPa: 800
 Setting value mm: 4.00...4.40
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
 Charge press hPa: 800
 Setting value bar: 5.10...5.70

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
 Charge press. hPa: 800
 Del. quantity cm³/
 1000S.: 47.00...48.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 2.5
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 37.00...38.00
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
 Del. quantity cm³/
 1000S.: 7.00...11.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 2.5
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
 Charge press hPa: 800
 Del. quantity cm³/
 1000S.: 23.00...29.00

Start:

Speed 1/min: 100
 Del. quantity cm³: 60.00...100.00
 mind 1000S.: 60.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 6.20...7.00
 mm: (6.20...7.00)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 800

| | | |
|--------------------------------------|--------------------------------------|---|
| TD travel | mm: 4.00...4.40 mm: (3.50...4.90) | + Del. quantity cm ³ /: 41.00...42.00 1000s.: (38.50...44.50) |
| Shutoff | | + 2nd speed 1/min: 2700 |
| electromagnet Volt: | 12 | + Charge press. hPa: 800 |
| 4th speed | 1/min: 1000 | + Shutoff |
| Charge press | hPa: 800 | + electromagnet Volt: 12 |
| TD travel | mm: 1.90...2.70 mm: (1.60...3.00) | + Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| Shutoff | | + 3rd speed 1/min: 2500 |
| electromagnet Volt: | 12 | + Charge press. hPa: 800 |
| 6th speed | 1/min: 1800 | + Shutoff |
| Charge press. | hPa: 800 | + electromagnet Volt: 12 |
| TD travel | mm: 5.70...6.50 mm: (5.40...6.80) | + Del. quantity cm ³ /: 2.50...17.50 1000s.: (2.50...17.50) |
| Shutoff | | + 5th speed 1/min: 2400 |
| electromagnet Volt: | 12 | + Charge press. hPa: 800 |
| Supply-pump pressure characteristic: | | + Shutoff |
| 1st speed | 1/min: 600 | + electromagnet Volt: 12 |
| Supply-pump | | + Del. quantity cm ³ /: 23.00...29.00 |
| pressure | bar: 2.60...3.20 | 1000s.: (22.00...30.00) |
| Shutoff | | + 9th speed 1/min: 2000 |
| electromagnet Volt: | 12 | + Charge press. hPa: 800 |
| 2nd speed | 1/min: 1400 | + Shutoff |
| Charge press. | hPa: 800 | + electromagnet Volt: 12 |
| Supply-pump | | + Del. quantity cm ³ /: 43.40...45.40 |
| pressure | bar: 5.10...5.70 | 1000s.: (42.10...46.70) |
| Shutoff | | + 12th speed 1/min: 1400 |
| electromagnet Volt: | 12 | + Charge press. hPa: 800 |
| 3rd speed | 1/min: 2000 | + Shutoff |
| Charge press. | hPa: 800 | + electromagnet Volt: 12 |
| Supply-pump | | + Del. quantity cm ³ /: 47.00...48.00 |
| pressure | bar: 6.90...7.50 | 1000s.: (45.20...49.80) |
| Shutoff | | + 18th speed 1/min: 600 |
| electromagnet Volt: | 12 | + Shutoff |
| Overflow quantity at overflow valve: | | + electromagnet Volt: 12 |
| 1st speed | 1/min: 600 | + Del. quantity cm ³ /: 37.00...38.00 |
| Shutoff | | 1000s.: (34.50...40.50) |
| electromagnet Volt: | 12 | + 20th speed 1/min: 1000 |
| Overflow | : 41.70...83.40 | + Charge press. hPa: 800 |
| quantity cm ³ /10s: | (41.70...83.40) | + Shutoff |
| 2nd speed | 1/min: 2000 | + electromagnet Volt: 12 |
| Charge press. | hPa: 800 | + Del. quantity cm ³ /: 44.90...47.90 |
| Shutoff | | 1000s.: (43.40...49.40) |
| electromagnet Volt: | 12 | Mech. shutoff: |
| Overflow | : 55.60...139.00 | Electr. shutoff: |
| quantity cm ³ /10s: | (55.60...139.00) | + 1st speed 1/min: 425 |
| Delivery-quant. and breakaway char.: | | + Del. quantity cm ³ /: 0.00...3.00 |
| 1nd speed | 1/min: 700 | 1000s.: (0.00...3.00) |
| Charge-air pressure-setting | | Idle delivery: |
| point | hPa: 200 | + 1st speed 1/min: 425 |
| LDA-stroke | mm: 4.5 | + Shutoff |
| Shutoff | | + electromagnet Volt: 12 |
| electromagnet Volt: | 12 | + Del. quantity cm ³ /: 7.00...11.00 |

Dispersion cm³/: 2.5
1000S.: (3.0)
2nd speed 1/min: 660
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 520
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...7.00
1000S.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...100.00
1000S.: (40.00...100.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.4...1.6
SVS max. mm: 3.6
XK mm: 17.0...19.0
XL mm: 10.3...13.7
Ya mm: 38.8...42.8
Yb mm: 34.1...43.9

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 11.06.92
 replaces : 18.12.86
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R234
 Type number : 0 460 494 187
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : X8/45 Regata TD

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 4.90...5.30
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 45.50...46.50

Shutoff
 electromagnet Volt: 12
 Dispersion cm³: 2.5
 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 800
 Del. quantity cm³/
 1000S.: 33.00...34.00

Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 16.00...20.00

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 2.5
 1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2400
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 15.00...21.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³: 57.00...83.00
 mind 1000S.: 57.00

Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1500
 Charge press. hPa: 12
 Inj.-qty. cm³/
 difference 1000S.: 8.00...16.00 #
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)

1. Speed 1/min: 1500
TD-travel difference mm: 1.30...1.50 #
Shutoff

electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1. Speed 1/min: 1500
Supply pump pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 1000
TD travel mm: 7.40...8.20
mm: (7.10...8.50)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4.90...5.30
mm: (4.60...5.60)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.00...1.80
mm: (0.70...2.10)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 3.50...4.10
Shutoff
electromagnet Volt: 12
4th speed 1/min: 400
Charge press. hPa: 1000

Supply-pump pressure bar: 2.20...2.80
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
Charge-air pressure-setting point hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...43.50
1000s.: (40.50...45.50)
3rd speed 1/min: 2550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...8.00
1000s.: -
5th speed 1/min: 2400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000s.: (14.00...22.00)
8th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.50...32.50
1000s.: -
9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.50...47.50
1000s.: (43.80...48.20)
10th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.50...50.50
1000s.: -
12th speed 1/min: 1500

Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 45.50...46.50
 1000s.: (44.00...48.00)
 18th speed 1/min: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 33.00...34.00
 1000s.: (31.00...36.00)
 20th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 32.80...35.20
 1000s.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 16.00...20.00
 1000s.: (14.00...22.00)
 Dispersion cm³: 2.5
 1000s.: (2.5)
 2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 4.50...10.50
 1000s.: (3.00...12.00)
 4th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1500
 Inj.-qty. cm³: 5.00...7.00 8
 difference 1000s.: -
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 Inj.-qty. cm³: 8.00...16.00#
 difference 1000s.: (8.00...16.00)
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):

1st speed 1/min: 1500
 TD-travel : 1.30...1.50 #
 difference mm: (1.30...1.50)
 Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1500
 Supply pump-
 pressure : 0.10...0.30 8
 difference bar: -
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 55.00...81.00
 1000s.: (55.00...81.00)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 20.00...40.00
 1000s.: (20.00...40.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 57.00...83.00
 1000s.: (57.00...83.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.7...6.0 |
| MS | mm: 1.4..1.65 |
| XK | mm: 17.0...19.0 |
| XL | mm: 10.6...14.0 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 45.2...53.8 |

Remarks:
 :
 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
 Edition : 02.06.92
 replaces : 16.01.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R22-7
 Type number : 0 460 494 189
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-SOFIM

Engine : 8144-67-220

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
 Setting value mm: 7.60...8.00
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1800
 Setting value bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
 Del. quantity cm³/
 1000S.: 37.50...38.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: -

Low-idle speed regulation

Speed 1/min: 370
 Del. quantity cm³/
 1000S.: 8.00...12.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: -

Full-load speed regulation

Speed 1/min: 2350
 Del. quantity cm³/
 1000S.: 18.00...26.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 55.00...95.00
 mind 1000S.: 55.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 TD travel mm: 8.30...9.10
 mm: (8.00...9.40)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1800
 TD travel mm: 7.60...8.00
 mm: (7.10...8.50)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600
 TD travel mm: 1.20...2.00
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12

| | |
|---|---|
| Shutoff electromagnet Volt: 12 | Del. quantity cm ³ /: 43.50...46.50 |
| Supply-pump pressure characteristic: | Shutoff electromagnet Volt: 12 |
| 1st speed 1/min: 600 | 12th speed 1/min: 2000 |
| Supply-pump pressure bar: 3.20...3.80 | Shutoff electromagnet Volt: 12 |
| bar: - | Del. quantity cm ³ /: 37.50...38.50 |
| Shutoff electromagnet Volt: 12 | 1000S.: (35.70...40.30) |
| 2nd speed 1/min: 1800 | 20th speed 1/min: 600 |
| Supply-pump pressure bar: 6.30...6.90 | Shutoff electromagnet Volt: 12 |
| bar: - | Del. quantity cm ³ /: 34.80...38.80 |
| Shutoff electromagnet Volt: 12 | 1000S.: (33.80...39.80) |
| 3rd speed 1/min: 2000 | Mech. shutoff: |
| Supply-pump pressure bar: 6.70...7.30 | Electr. shutoff: |
| bar: - | 1st speed 1/min: 370 |
| Shutoff electromagnet Volt: 12 | Del. quantity cm ³ /: 0.00...3.00 |
| Overflow quantity at overflow valve: | 1000S.: - |
| 1st speed 1/min: 600 | Idle delivery: |
| Shutoff electromagnet Volt: 12 | 1st speed 1/min: 370 |
| Overflow : 41.00...83.00 | Shutoff electromagnet Volt: 12 |
| quantity cm ³ /10s: (26.00...98.00) | Del. quantity cm ³ /: 8.00...12.00 |
| 2nd speed 1/min: 2100 | 1000S.: (6.00...14.00) |
| Shutoff electromagnet Volt: 12 | Dispersion cm ³ /: 3.0 |
| Overflow : 55.00...138.00 | 1000S.: (3.0) |
| quantity cm ³ /10s: (40.00...153.00) | 2nd speed 1/min: 500 |
| Delivery-quant. and breakaway char.: | Shutoff electromagnet Volt: 12 |
| 3rd speed 1/min: 2500 | Del. quantity cm ³ /: 0.00...3.00 |
| Shutoff electromagnet Volt: 12 | 1000S.: - |
| Del. quantity cm ³ /: 0.00...4.40 | 3rd speed 1/min: 420 |
| 1000S.: - | Shutoff electromagnet Volt: 12 |
| Shutoff electromagnet Volt: 12 | Del. quantity cm ³ /: 4.50...8.50 |
| 5th speed 1/min: 2350 | 1000S.: - |
| Shutoff electromagnet Volt: 12 | Shutoff electromagnet Volt: 12 |
| Del. quantity cm ³ /: 18.00...26.00 | Load-dependent start of delivery: Inj.-qty.dif.measurement: |
| 1000S.: (16.00...28.00) | 1st speed 1/min: 1800 |
| 9th speed 1/min: 2100 | Shutoff electromagnet Volt: 12 |
| Shutoff electromagnet Volt: 12 | 2nd speed 1/min: 1800 |
| Del. quantity cm ³ /: 36.70...39.30 | 3rd speed 1/min: 1800 |
| 1000S.: (35.70...40.30) | Shutoff electromagnet Volt: 12 |
| 10th speed 1/min: 1100 | 4th speed 1/min: 1800 |
| Shutoff electromagnet Volt: 12 | 5th speed 1/min: 1800 |
| | TD-travel dif.measurement: correttore anticipo iniezione (SV): |
| | 1st speed 1/min: 1800 |

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1800
3rd speed 1/min: 1800
4th speed 1/min: 1800

SP press.-dif.measurement:

pompa di mandata (FP):

1st speed 1/min: 1800

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1800
3rd speed 1/min: 1800
4th speed 1/min: 1800

Automatic starting fuel delivery:

1st speed 1/min: 400

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 37.00...67.00
1000S.: (37.00...67.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 55.00...95.00
1000S.: (55.00...95.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: - |
| KF | mm: 5.4...5.7 |
| MS | mm: 1.7...1.9 |
| XK | mm: 25...27 |
| XL | mm: 11.8...15.8 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 43.3...49.7 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 12.06.92
replaces : 17.07.87
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R254
Type number : 0 460 494 200
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : D86-1.6L(SG)

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 500
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 500
Setting value bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:
Speed 1/min: 1000
Charge press. hPa: 500
Del. quantity cm³/
1000S.: 28.00...29.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:
Speed 1/min: 1000
Del. quantity cm³/
1000S.: 24.50...25.50

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Charge press hPa: 500
Del. quantity cm³/
1000S.: 12.00...16.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 4.00...6.00*
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.10...0.30*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
Charge press hPa: 500
TD travel mm: 6.50...7.30
mm: (6.20...7.60)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 500
TD travel mm: 2.10...2.50
mm: (1.60...3.00)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 500
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 500
Supply-pump
pressure bar: 3.00...3.60
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 500
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Charge press. hPa: 500
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 1000
Charge-air pressure-setting
point hPa: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...27.00
1000s.: (23.50...29.50)
3rd speed 1/min: 2700
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)
5th speed 1/min: 2475
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000s.: (10.00...18.00)
8th speed 1/min: 2400
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 16.00...26.00
1000s.: (15.00...27.00)
9th speed 1/min: 2250
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000s.: (25.80...30.20)
10th speed 1/min: 1000
Charge press. hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...29.00
1000s.: (26.30...30.70)
11th speed 1/min: 1000
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...29.00
1000s.: (26.30...30.70)
12th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quynity cm³/: 24.50...25.50
1000s.: (22.00...28.00)

| | |
|--|--|
| 14th speed 1/min: 600 | Inj.-qty. cm ³ / : 4.00...6.00* |
| Charge press. hPa: 500 | difference 1000S.: - |
| Shutoff | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| Del. quantity cm ³ /: 22.00...25.00 | 3rd speed 1/min: 1250 |
| 1000S.: (20.50...26.50) | Inj.-qty. cm ³ /: 6.00...10.00' |
| Mech. shutoff: | difference 1000S.: (4.00...12.00) |
| Electr. shutoff: | Shutoff |
| 1st speed 1/min: 425 | electromagnet Volt: 12 |
| Del. quantity cm ³ /: 0.00...3.00 | 5th speed 1/min: 1250 |
| 1000S.: (0.00...3.00) | Inj.-qty. cm ³ /: 2.00...8.00# |
| Damper set qty.: | difference 1000S.: (2.00...8.00) |
| LFG-setting: | Shutoff |
| solidale con carcassa: | electromagnet Volt: 12 |
| Idle delivery: | 4th speed 1/min: 1250 |
| 1st speed 1/min: 375 | TD-travel : 0.60...0.80' |
| Shutoff | difference mm: (0.60...0.80) |
| electromagnet Volt: 12 | Shutoff |
| Del. quantity cm ³ /: 11.00...13.00 | electromagnet Volt: 12 |
| 1000S.: (8.00...16.00) | 4th speed 1/min: 1250 |
| 2nd speed 1/min: 425 | TD-travel : 1.30...1.70# |
| Shutoff | difference mm: (1.00...2.00) |
| electromagnet Volt: 12 | SP press.-dif.measurement: |
| Del. quantity cm ³ /: 5.50...8.50 | 0cmpa di mandata (FP); |
| 1000S.: (3.00...11.00) | 1st speed 1/min: 1250 |
| Dispersion cm ³ /: 2.0 | Supply pump- |
| 1000S.: (3.0) | pressure : 0.10...0.30* |
| High Idle: | difference bar: - |
| 1st speed 1/min: 525 | Shutoff |
| Shutoff | electromagnet Volt: 12 |
| electromagnet Volt: 12 | 4th speed 1/min: 1250 |
| Del. quantity cm ³ /: 7.00...9.00 | Supply pump- |
| 1000S.: (4.00...12.00) | pressure : 0.70...1.10# |
| Residual: | difference bar: (0.50...1.30) |
| 1.Rotacao 1/min: 550 | Shutoff |
| Shutoff | electromagnet Volt: 12 |
| electromagnet Volt: 12 | Del. quantity cm ³ /: 35.00...85.00 |
| Del. quantity cm ³ /: 2.50...3.50 | 1000S.: (35.00...85.00) |
| 1000S.: (1.00...5.00) | 2nd speed 1/min: 380 |
| 2nd speed 1/min: 500 | Shutoff |
| Shutoff | electromagnet Volt: 12 |
| electromagnet Volt: 12 | Del. quantity cm ³ /: 10.00...30.00 |
| Del. quantity cm ³ /: 3.20...5.20 | 1000S.: (10.00...30.00) |
| 1000S.: (1.70...6.70) | 4th speed 1/min: 100 |
| Load-dependent start of delivery: | Shutoff |
| Inj.-qty.dif.measurement: | electromagnet Volt: 12 |
| 1st speed 1/min: 1250 | Del. quantity cm ³ /: 35.00...85.00 |
| | 1000S.: (35.00...85.00) |
| | Shutoff electromagnet: |

Cut-in

min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.7...6.0 |
| MS | mm: 1.3..1.55 |
| Ya | mm: 37.6...41.6 |
| Yb | mm: 50.4...63.3 |

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 12.06.92
replaces : 10.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R270
Type number : 0 460 494 210
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : D86-1.6L(SG)M/87

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.00...4.60
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000s.: 28.50...29.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000s.: 2.50...3.50
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Del. quantity cm³/
1000s.: 14.00...18.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000s.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000s.: 6.00...12.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2.10...2.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 4.00...4.60
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2700
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...6.00
1000s.: (0.00...6.00)
5th speed 1/min: 2475
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 14.00...18.00
1000s.: (12.00...20.00)
8th speed 1/min: 2400
Shutoff
electromagnet Volt: 12

Del. quantity cm³: 18.00...28.00
1000s.: (17.00...29.00)
9th speed 1/min: 2250

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 27.50...29.50
1000s.: (26.30...30.70)
12th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 28.50...29.50
1000s.: (26.80...31.20)
20th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 22.00...25.00
1000s.: (20.50...26.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 11.00...13.00
1000s.: (8.00...16.00)
2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 5.50...8.50
1000s.: (3.00...11.00)
Dispersion cm³: 2.0
1000s.: (3.0)

High Idle:

1st speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 7.00...9.00
1000s.: (4.00...12.00)

Residual:

1.Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 2.50...3.50
1000s.: (1.00...5.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.20...5.20
1000S.: (1.70...6.70)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250
Inj.-qty. cm³/: 6.00...12.00*
difference 1000S.: (5.00...13.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00#
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80*
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.40...1.80#
difference mm: (1.10...2.10)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50#
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.2...1.6 |
| Ya | mm: 37.6...41.6 |
| Yb | mm: 50.4...63.3 |

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 15.06.92
 replaces : 17.07.87
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R282
 Type number : 0 460 494 214
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : M705 LA 19.0 DUKATO

Power KW: 51

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Setting value mm: 4.30...4.70
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:
 Speed 1/min: 1500
 Del. quantity cm³/
 1000S.: 31.00...32.00

Shutoff
 electromagnet Volt: 12
 Dispersion cm³/ : 3.0
 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 390
 Del. quantity cm³/
 1000S.: 6.00...10.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/ : 2.5
 1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2450
 Del. quantity cm³/
 1000S.: 18.00...24.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/ : 55.00...95.00
 mind 1000S.: 55.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1500
 Charge press hPa: 12
 Inj.-qty. cm³/
 difference 1000S.: 9.00...17.00
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1500
 TD-travel
 difference mm: 0.60...0.80
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

| | | |
|--|--------------------|--|
| 2nd speed | 1/min: 2300 | Shutoff electromagnet Volt: 12 |
| TD travel | mm: 7.10...7.90 | Del. quantity cm ³ /: 1.00...9.00 |
| | mm: (6.80...8.20) | 1000S.: (0.00...10.00) |
| Shutoff electromagnet Volt: 12 | | |
| 3rd speed | 1/min: 1500 | 5th speed 1/min: 2450 |
| TD travel | mm: 4.30...4.70 | Shutoff electromagnet Volt: 12 |
| | mm: (3.80...5.20) | Del. quantity cm ³ /: 18.00...24.00 |
| Shutoff electromagnet Volt: 12 | | 1000S.: (16.00...26.00) |
| 4th speed | 1/min: 800 | 9th speed 1/min: 2300 |
| TD travel | mm: 1.70...2.50 | Shutoff electromagnet Volt: 12 |
| | mm: (1.40...2.80) | Del. quantity cm ³ /: 31.70...34.30 |
| Shutoff electromagnet Volt: 12 | | 1000S.: (30.50...35.50) |
| Supply-pump pressure characteristic: | | 10th speed 1/min: 1000 |
| 1st speed | 1/min: 2300 | Shutoff electromagnet Volt: 12 |
| Supply-pump pressure | bar: 7.40...8.00 | Del. quantity cm ³ /: 31.00...34.00 |
| | bar: (7.00...8.40) | 1000S.: (30.00...35.00) |
| Shutoff electromagnet Volt: 12 | | 12th speed 1/min: 1500 |
| 2nd speed | 1/min: 1500 | Shutoff electromagnet Volt: 12 |
| Supply-pump pressure | bar: 5.60...6.20 | Del. quantity cm ³ /: 31.00...32.00 |
| | bar: (5.20...6.60) | 1000S.: (29.00...34.00) |
| Shutoff electromagnet Volt: 12 | | 20th speed 1/min: 600 |
| 3rd speed | 1/min: 400 | Shutoff electromagnet Volt: 12 |
| Supply-pump pressure | bar: 2.80...3.40 | Del. quantity cm ³ /: 31.50...35.50 |
| | bar: (2.40...3.80) | 1000S.: (30.50...36.50) |
| Shutoff electromagnet Volt: 12 | | Mech. shutoff: |
| Overflow quantity at overflow valve: | | Electr. shutoff: |
| 1st speed | 1/min: 600 | 1st speed 1/min: 390 |
| Shutoff electromagnet Volt: 12 | | Del. quantity cm ³ /: 0.00...3.00 |
| Overflow | : 41.70...83.40 | 1000S.: (0.00...3.00) |
| quantity cm ³ /10s: | (41.70...83.40) | |
| 2nd speed | 1/min: 2300 | Idle delivery: |
| Shutoff electromagnet Volt: 12 | | 1st speed 1/min: 390 |
| Overflow | : 55.60...139.00 | Shutoff electromagnet Volt: 12 |
| quantity cm ³ /10s: | (55.60...139.00) | Del. quantity cm ³ /: 6.00...10.00 |
| Delivery-quant. and breakaway char.: | | 1000S.: (4.00...12.00) |
| 2nd speed | 1/min: 2750 | Dispersion cm ³ /: 2.5 |
| Shutoff electromagnet Volt: 12 | | 1000S.: (2.5) |
| Del. quantity cm ³ /: 0.00...4.00 | | 2nd speed 1/min: 440 |
| 1000S.: (0.00...4.00) | | Shutoff electromagnet Volt: 12 |
| 3rd speed | 1/min: 2650 | Del. quantity cm ³ /: 1.00...7.00 |
| | | 1000S.: (0.50...7.50) |
| | | 3rd speed 1/min: 500 |
| | | Shutoff electromagnet Volt: 12 |
| | | Del. quantity cm ³ /: 0.00...3.00 |
| | | 1000S.: (0.00...3.00) |
| | | Load-dependent start of delivery: Inj.-qty.dif.measurement: |

3rd speed 1/min: 1500
Inj.-qty. cm³/: 9.00...17.00
difference 1000s.: (9.00...17.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.60...0.80
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000s.: (45.00...75.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...46.00
1000s.: (26.00...46.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...95.00
1000s.: (55.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.7..1.95
SVS max. mm: 2.5
Ya mm: 37.2...39.2
Yb mm: 42.9...51.6

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
 Edition : 15.06.92
 replaces : 19.07.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R293
 Type number : 0 460 494 221
 Customer Part-No. :

Customer-specific information
 Customer : VW

Engine : 086T-1.6L LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C

with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
 Charge press. hPa: 750
 Setting value mm: 3.00...3.40
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
 Charge press hPa: 750
 Setting value bar: 4.90...5.50

Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 750
 Del. quantity cm³/
 1000s.: 42.00...43.00

Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000s.: 26.50...27.50

Shutoff
 electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
 Del. quantity cm³/
 1000s.: 2.00...3.00

Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
 Charge press hPa: 750
 Del. quantity cm³/
 1000s.: 13.00...17.00

Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 35.00...85.00
 mind 1000s.: 35.00

Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1250
 Charge press hPa: 12
 Inj.-qty. cm³/
 difference 1000s.: 7.00...9.00*

Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1250
 SP press.-dif.measurement

pompa di mandata (FP)
 1.Speed 1/min: 1250
 Supply pump
 pressure
 difference bar: 0.10...0.30*
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2250
 Charge press hPa: 750
 TD travel mm: 7.00...7.80
 mm: (6.70...8.10)
 electromagnet Volt: 12
 2nd speed 1/min: 2000
 Charge press hPa: 750
 TD travel mm: 6.40...7.20
 mm: (6.10...7.50)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 Charge press hPa: 750
 TD travel mm: 3.00...3.40
 mm: (2.50...3.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1000
 Charge press hPa: 750
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 3.30...3.90
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2250
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 7.70...8.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (27.80...97.30)
 2nd speed 1/min: 2250
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 5..5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.00...34.00
 1000S.: (30.50...36.50)
 2nd speed 1/min: 2650
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 2525
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 8th speed 1/min: 2425
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 26.50...36.50
 1000S.: (25.50...37.50)
 9th speed 1/min: 2250
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.30...38.30
 1000S.: (35.10...39.50)
 12th speed 1/min: 1500
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 42.00...43.00
 1000S.: (40.30...44.70)
 18th speed 1/min: 700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 26.50...27.50
 1000S.: (24.00...30.00)
 20th speed 1/min: 700
 Charge press. hPa: 750

| | |
|--|--|
| Shutoff | Del. quantity cm ³ /: 2.50...4.50 |
| electromagnet Volt: 12 | 1000S.: (0.00...7.00) |
| Del. quantity cm ³ /: 34.00...37.00 | |
| 1000S.: (32.50...38.50) | |
| 21th speed 1/min: 600 | |
| Shutoff | Load-dependent start of delivery: |
| electromagnet Volt: 12 | Inj.-qty.dif.measurement: |
| Del. quantity cm ³ /: 25.00...30.00 | |
| 1000S.: (22.50...32.50) | |
| Mech. shutoff: | 1st speed 1/min: 1250 |
| Electr. shutoff: | Inj.-qty. cm ³ / : 7.00...9.00* |
| 1st speed 1/min: 425 | difference 1000S.: - |
| Del. quantity cm ³ /: 0.00...3.00 | |
| 1000S.: (0.00...3.00) | |
| Idle delivery: | Shutoff |
| Damper set qty.: | electromagnet Volt: 12 |
| 2nd speed 1/min: 1000 | 3rd speed 1/min: 1250 |
| Shutoff | Inj.-qty. cm ³ /: 9.00...13.00' |
| electromagnet Volt: 12 | difference 1000S.: (7.00...15.00) |
| Del. quantity cm ³ /: 11.00...13.00 | |
| 1000S.: (8.00...16.00) | |
| LFG-setting: | Shutoff |
| solidale con carcassa: | electromagnet Volt: 12 |
| Idle delivery: | 4th speed 1/min: 1250 |
| 1st speed 1/min: 425 | TD-travel : 1.00...1.40# |
| Shutoff | difference mm: (0.70...1.70) |
| electromagnet Volt: 12 | |
| Del. quantity cm ³ /: 9.00...11.00 | |
| 1000S.: (4.50...15.50) | |
| Dispersion cm ³ /: 2.5 | SP press.-dif.measurement: |
| 1000S.: (3.0) | pompa di mandata (FP): |
| High Idle: | 1st speed 1/min: 1250 |
| 1st speed 1/mi: 525 | Supply pump- |
| Shutoff | pressure : 0.10...0.30* |
| electromagnet Volt: 12 | difference bar: (0.20...0.20) |
| Del. quantity cm ³ /: 9.00...11.00 | |
| 1000S.: (5.00...15.00) | |
| Residual: | Shutoff |
| 1. Rotacao 1/min: 550 | electromagnet Volt: 12 |
| Shutoff | 4th speed 1/min: 1250 |
| electromagnet Volt: 12 | Supply pump- |
| Del. quantity cm ³ /: 2.00...3.00 | pressure : 0.60...1.00# |
| 1000S.: (-0.50...5.50) | difference bar: (0.40...1.20) |
| 2nd speed 1/min: 500 | |
| Shutoff | Shutoff |
| electromagnet Volt: 12 | electromagnet Volt: 12 |
| | Automatic starting fuel delivery: |
| | 1st speed 1/min: 150 |
| | Shutoff |
| | electromagnet Volt: 12 |
| | Del. quantity cm ³ /: 35.00...85.00 |
| | 1000S.: (35.00...85.00) |
| | 2nd speed 1/min: 350 |
| | Shutoff |
| | electromagnet Volt: 12 |
| | Del. quantity cm ³ /: 17.00...37.00 |
| | 1000S.: (17.00...37.00) |
| | 4th speed 1/min: 100 |

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: K1 |
| MS | mm: 1.1...1.5 |
| SVS max. | mm: 3.1 |
| Ya | mm: 37.6...41.6 |
| Yb | mm: 50.4...63.3 |

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.06.92
replaces : 14.07.89
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R162-4
Type number : 0 460 494 224
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9 DEP

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm³/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 7.00...9.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2440
Del. quantity cm³/
1000S.: 20.00...26.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 44.00...84.00
mind 1000S.: 24.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: *4.00...12.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: *0.70...0.90
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Supply pump
pressure
difference bar: 0.00...0.20
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.60...8.40
mm: (7.30...8.70)
Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.00...4.40
mm: (3.50...4.90)
Shutoff electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.50...2.30
mm: (1.20...2.60)
Shutoff electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump pressure bar: 3.00...3.60
Shutoff electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 4.20...4.80
Shutoff electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump pressure bar: 6.30...6.90
Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2250
Shutoff electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2650
Shutoff electromagnet Volt: 12
Del. quantity cm³: 0.00...7.00
1000s.: (0.00...7.00)

3rd speed 1/min: 2540
Shutoff electromagnet Volt: 12
Del. quantity cm³: 10.00...16.00
1000s.: (9.00...17.00)
5th speed 1/min: 2440
Shutoff electromagnet Volt: 12
Del. quantity cm³: 20.00...26.00
1000s.: (19.00...27.00)
9th speed 1/min: 2250
Shutoff electromagnet Volt: 12
Del. quantity cm³: 29.20...31.20
1000s.: (28.20...32.20)
10th speed 1/min: 2000
Shutoff electromagnet Volt: 12
Del. quantity cm³: 30.10...32.10
1000s.: (29.10...33.10)
11th speed 1/min: 800
Shutoff electromagnet Volt: 12
Del. quantity cm³: 28.20...30.80
1000s.: (27.50...31.50)
12th speed 1/min: 1250
Shutoff electromagnet Volt: 12
Del. quantity cm³: 28.00...29.00
1000s.: (26.50...30.50)
20th speed 1/min: 500
Shutoff electromagnet Volt: 12
Del. quantity cm³: 28.50...31.50
1000s.: (28.00...32.00)

Mech. shutoff:

Idle delivery:

1st speed 1/min: 375
Shutoff electromagnet Volt: 12
Del. quantity cm³: 7.00...9.00
1000s.: (4.00...12.00)
Dispersion cm³: 2.5
1000s.: (3.0)
Shutoff electromagnet Volt: 12
4th speed 1/min: 550
Shutoff electromagnet Volt: 12
Del. quantity cm³: 2.50...3.50
1000s.: (1.00...5.00)

LFG-setting:
solidale con carcassa:
Idle delivery:

2nd speed 1/min: 470

| | |
|--|--|
| Shutoff | Del. quantity cm ³ /: 15.00...35.00 |
| electromagnet Volt: 12 | 1000S.: (...45.00) |
| Del. quantity cm ³ /: 7.00...9.00 | |
| 1000S.: (4.00...12.00) | |
| Load-dependent start of delivery: | |
| Inj.-qty.dif.measurement: | |
| 1st speed 1/min: 1250 | |
| Inj.-qty. cm ³ / : #3.00...5.00 | |
| difference 1000S.: (3.00...5.00) | |
| Shutoff | |
| electromagnet Volt: 12 | |
| 3rd speed 1/min: 1250 | |
| Inj.-qty. cm ³ /: *4.00...12.00 | |
| difference 1000S.: (2.00...14.00) | |
| Shutoff | |
| electromagnet Volt: 12 | |
| TD-travel dif.measurement: | |
| correttore anticipo iniezione (SV): | |
| 1st speed 1/min: 1250 | |
| TD-travel : *0.70...0.90 | |
| difference mm: (0.70...0.90) | |
| Shutoff | |
| electromagnet Volt: 12 | |
| SP press.-dif.measurement: | |
| pompa di mandata (FP): | |
| 1st speed 1/min: 1250 | |
| Supply pump- | |
| pressure : #0.00...0.20 | |
| difference bar: (0.00...0.20) | |
| Shutoff | |
| electromagnet Volt: 12 | |
| Part-load del.at 3rd inj.-qty. | |
| terza fermo della portata | |
| stop (EGR set) | |
| scarico) (ARF) | |
| gaz d'échappement-ARF) | |
| Spacing mm: 10.8 | |
| 1st speed 1/min: 1125 | |
| Shutoff | |
| electromagnet Volt: 12 | |
| Del. quantity cm ³ /: 6.00...10.00 | |
| 1000S.: (5.50...10.50) | |
| Automatic starting fuel delivery: | |
| 1st speed 1/min: 200 | |
| Shutoff | |
| electromagnet Volt: 12 | |
| Del. quantity cm ³ /: 40.00...80.00 | |
| 1000S.: (20.00...) | |
| 2nd speed 1/min: 300 | |
| Shutoff | |
| electromagnet Volt: 12 | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 15.06.92
 replaces : 17.01.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R303
 Type number : 0 460 494 225
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : X8/45S RITMO, PRISMA

Power KW: 66

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 5.50...5.90

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value bar: 5.30...5.90
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 52.00...53.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 40.00...41.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 4.00...6.00
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 30.00...36.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 55.00...85.00
 mind 1000S.: 55.00

| | | | |
|-------------------------------------|-----------------------|--------------------------------------|---------------------------------------|
| KSB/AFB | | TD travel | mm: 1.50...2.30 mm: (1.20...2.60) |
| Valve | Volt: 12 | KSB/AFB | |
| Shutoff | | valve | Volt: 12 |
| electromagnet | Volt: 12 | Shutoff | |
| Load-dependent start of delivery: | | electromagnet | Volt: 12 |
| Inj.-qty./dif.measurement: | | 8th speed | 1/min: 1000 |
| Speed | 1/min: 1500 | Charge press. | hPa: 1000 |
| Charge press | hPa: 12 | TD travel | mm: 2.50...5.50 mm: (2.50...5.50) |
| Inj.-qty. | cm ³ / | Shutoff | |
| difference | 1000S.: 8.00...16.00# | electromagnet | Volt: 12 |
| KSB/AFB | | 9th speed | 1/min: 500 |
| valve | Volt: 12 | Charge press. | hPa: 1000 |
| Shutoff | | TD travel | mm: 3.20...4.80 mm: (2.50...5.50) |
| electromagnet | Volt: 12 | Shutoff | |
| TD-travel dif.measurement | | electromagnet | Volt: 12 |
| correttore anticipo iniezione (SV) | | Supply-pump pressure characteristic: | |
| 1.Speed | 1/min: 1500 | 1st speed | 1/min: 2100 |
| TD-travel | | Charge press. | hPa: 1000 |
| difference | mm: 0.80...1.00# | Supply-pump | |
| KSB/AFB | | pressure | bar: 7.00...7.60 |
| valve | Volt: 12 | KSB/AFB | |
| Shutoff | | valve | Volt: 12 |
| electromagnet | Volt: 12 | Shutoff | |
| SP press.-dif.measurement | | electromagnet | Volt: 12 |
| pompa di manda (FP) | | 2nd speed | 1/min: 1500 |
| 1.Speed | 1/min: 1500 | Charge press. | hPa: 1000 |
| Supply pump | | Supply-pump | |
| pressure | | pressure | bar: 5.30...5.90 |
| difference | bar: 0.10...0.30* | KSB/AFB | |
| KSB/AFB | | valve | Volt: 12 |
| valve | Volt: 12 | Shutoff | |
| Shutoff | | electromagnet | Volt: 12 |
| electromagnet | Volt: 12 | 3rd speed | 1/min: 800 |
| Inspection-pump test specifications | | Charge press. | hPa: 1000 |
| Test specifications in parentheses | | Supply-pump | |
| Timing-device characteristic: | | pressure | bar: 3.20...3.80 |
| 2nd speed | 1/min: 2100 | KSB/AFB | |
| Charge press | hPa: 1000 | valve | Volt: 12 |
| TD travel | mm: 8.20...9.00 | Shutoff | |
| | mm: (7.90...9.30) | electromagnet | Volt: 12 |
| KSB/AFB | | Overflow quantity at overflow valve: | |
| valve | Volt: 12 | 1st speed | 1/min: 800 |
| Shutoff | | Charge press. | hPa: 1000 |
| electromagnet | Volt: 12 | KSB/AFB | |
| 3rd speed | 1/min: 1500 | valve | Volt: 12 |
| Charge press | hPa: 1000 | Shutoff | |
| TD travel | mm: 5.50...5.90 | electromagnet | Volt: 12 |
| | mm: (5.20...6.20) | Overflow | : 41.70...83.40 |
| KSB/AFB | | quantity | cm ³ /10s: (41.70...83.40) |
| valve | Volt: 12 | 2nd speed | 1/min: 2100 |
| Shutoff | | Charge press. | hPa: 1000 |
| electromagnet | Volt: 12 | KSB/AFB | |
| 4th speed | 1/min: 800 | valve | Volt: 12 |
| Charge press | hPa: 1000 | | |

| | |
|---|--|
| Shutoff | KSB/AFB |
| electromagnet Volt: 12 | valve Volt: 12 |
| Overflow : 55.60...139.00 | Shutoff |
| quantity cm ³ /10s: (55.60...139.00) | electromagnet Volt: 12 |
| Delivery-quant. and breakaway char.: | Del. quantity cm ³ /: 52.00...53.00 |
| 1nd speed 1/min: 800 | 1000S.: (50.50...54.50) |
| Charge-air pressure-setting | 18th speed 1/min: 600 |
| point hPa: 400 | KSB/AFB |
| LDA-stroke mm: 6.2 | valve Volt: 12 |
| KSB/AFB | Shutoff |
| valve Volt: 12 | electromagnet Volt: 12 |
| Shutoff | Del. quantity cm ³ /: 40.00...41.00 |
| electromagnet Volt: 12 | 1000S.: (38.00...43.00) |
| Del. quantity cm ³ /: 43.50...44.50 | 20th speed 1/min: 800 |
| 1000S.: (41.50...46.50) | KSB/AFB |
| 2nd speed 1/min: 2450 | valve Volt: 12 |
| Charge press. hPa: 1000 | Shutoff |
| KSB/AFB | electromagnet Volt: 12 |
| valve Volt: 12 | Del. quantity cm ³ /: 37.00...39.00 |
| Shutoff | 1000S.: (35.50...40.50) |
| electromagnet Volt: 12 | Mech. shutoff: |
| Del. quantity cm ³ /: 12.00...20.00 | Electr. shutoff: |
| 1000S.: (11.00...21.00) | 1st speed 1/min: 400 |
| 3rd speed 1/min: 2650 | Del. quantity cm ³ /: 0.00...3.00 |
| Charge press. hPa: 1000 | 1000S.: (0.00...3.00) |
| KSB/AFB | Damper set qty.: |
| valve Volt: 12 | LFG-setting: |
| Shutoff | solidale con carcassa: |
| electromagnet Volt: 12 | Idle delivery: |
| Del. quantity cm ³ /: 0.00...7.00 | 1st speed 1/min: 400 |
| 1000S.: - | KSB/AFB |
| 5th speed 1/min: 2300 | valve Volt: 12 |
| Charge press. hPa: 1000 | Shutoff |
| KSB/AFB | electromagnet Volt: 12 |
| valve Volt: 12 | Del. quantity cm ³ /: 11.00...15.00 |
| Shutoff | 1000S.: (9.50...16.50) |
| electromagnet Volt: 12 | Residual: |
| Del. quantity cm ³ /: 30.00...36.00 | 1.Rotacao 1/min: 700 |
| 1000S.: (29.00...37.00) | KSB/AFB |
| 9th speed 1/min: 2100 | valve Volt: 12 |
| Charge press. hPa: 1000 | Shutoff |
| KSB/AFB | electromagnet Volt: 12 |
| valve Volt: 12 | Del. quantity cm ³ /: 4.00...6.00 |
| Shutoff | 1000S.: (3.00...7.00) |
| electromagnet Volt: 12 | 2nd speed 1/min: 500 |
| Del. quantity cm ³ /: 50.50...53.50 | KSB/AFB |
| 1000S.: (49.50...54.50) | valve Volt: 12 |
| 10th speed 1/min: 800 | Shutoff |
| Charge press. hPa: 1000 | electromagnet Volt: 12 |
| KSB/AFB | Del. quantity cm ³ /: 6.50...9.50 |
| valve Volt: 12 | 1000S.: - |
| Shutoff | |
| electromagnet Volt: 12 | |
| Del. quantity cm ³ /: 55.50...58.50 | |
| 1000S.: - | |
| 12th speed 1/min: 1500 | |
| Charge press. hPa: 1000 | |

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : 5.00...7.00*
difference 1000S.: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Inj.-qty. cm³/: 8.00...16.00#
difference 1000S.: (8.00...16.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

TD-trave' dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.80...1.00#
difference mm: (0.80...1.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.20...0.20)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220
KSB/AFB
valve Volt: 12
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.00...83.00
1000S.: (57.00...83.00)

2nd speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.50...52.50
1000S.: (37.50...52.50)

4th speed 1/min: 100

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.1...3.5 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.0...1.4 |
| LDA stroke | mm: 6.2 |
| XK | mm: 18.8...20.8 |
| XL | mm: 10.0...13.4 |
| Ya | mm: 37.2...39.2 |
| Yb | mm: 37.5...43.5 |

* Correction at adjusting nut (46)
:

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
 Edition : 16.06.92
 replaces : 26.07.88
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R309
 Type number : 0 460 494 228
 Customer Part-No. :

Customer-specific information
 Customer : RNUR

Engine : J8S - 736

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening Pressure bar: 130.00...133.00

Test inj. tubing : motormah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
 Setting value mm: 2.60...3.00
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
 Setting value bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
 Del. quantity cm³/
 1000S.: 36.00...37.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 2.00...6.00
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
 Del. quantity cm³/
 1000S.: 20.00...26.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 52.00...92.00
 mind 1000S.: 52.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1125
 Inj.-qty. cm³/
 difference 1000S.: 11.00...15.00#
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1125

TD-travel
 difference mm: 0.50...0.70#
 Shutoff

electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1125
 Supply pump
 pressure
 difference bar: 0.10...0.30*

| | | |
|--------------------------------------|---|---|
| Shutoff | electromagnet Volt: 12 | electromagnet Volt: 12 |
| Inspection-pump test specifications | Test specifications in parentheses | Del. quantity cm ³ /: 0.00...5.00 1000s.: (0.00...5.00) |
| Timing-device characteristic: | | 3rd speed 1/min: 2650 |
| 2nd speed 1/min: 2000 | TD travel mm: 7.10...7.90 mm: (6.80...8.20) | Shutoff |
| 3rd speed 1/min: 1125 | TD travel mm: 2.60...3.00 mm: (2.10...3.50) | electromagnet Volt: 12 |
| 4th speed 1/min: 800 | TD travel mm: 0.70...1.50 mm: (0.40...1.80) | Del. quantity cm ³ /: 2.50...10.50 1000s.: (1.50...11.50) |
| 5th speed 1/min: 2500 | Shutoff | 5th speed 1/min: 2500 |
| Shutoff | electromagnet Volt: 12 | electromagnet Volt: 12 |
| 3rd speed 1/min: 1125 | TD travel mm: 2.60...3.00 mm: (2.10...3.50) | Del. quantity cm ³ /: 20.00...26.00 1000s.: (19.00...27.00) |
| 4th speed 1/min: 800 | TD travel mm: 0.70...1.50 mm: (0.40...1.80) | 9th speed 1/min: 2250 |
| 5th speed 1/min: 1125 | Shutoff | electromagnet Volt: 12 |
| 6th speed 1/min: 1750 | electromagnet Volt: 12 | Del. quantity cm ³ /: 35.30...37.30 1000s.: (34.00...38.60) |
| 7th speed 1/min: 1250 | Shutoff | 10th speed 1/min: 1750 |
| 8th speed 1/min: 1125 | electromagnet Volt: 12 | Shutoff |
| 9th speed 1/min: 1125 | Del. quantity cm ³ /: 34.50...36.50 1000s.: (33.20...37.80) | electromagnet Volt: 12 |
| 10th speed 1/min: 1750 | 12th speed 1/min: 1125 | Del. quantity cm ³ /: 36.00...37.00 1000s.: (34.20...38.80) |
| 11th speed 1/min: 1125 | Shutoff | 20th speed 1/min: 800 |
| 12th speed 1/min: 1125 | electromagnet Volt: 12 | Shutoff |
| Supply-pump pressure characteristic: | | electromagnet Volt: 12 |
| 1st speed 1/min: 800 | Supply-pump pressure bar: 3.10...3.70 | Del. quantity cm ³ /: 34.10...37.10 1000s.: (33.30...37.90) |
| 2nd speed 1/min: 1125 | Shutoff | Mech. shutoff: |
| 3rd speed 1/min: 2000 | electromagnet Volt: 12 | Electr. shutoff: |
| 4th speed 1/min: 2250 | Supply-pump pressure bar: 4.20...4.80 | 1st speed 1/min: 400 |
| 5th speed 1/min: 2500 | Shutoff | Del. quantity cm ³ /: 0.00...3.00 1000s.: (0.00...3.00) |
| 6th speed 1/min: 2500 | electromagnet Volt: 12 | Damper set qty.: |
| 7th speed 1/min: 2500 | Overflow quantity cm ³ /10s: (41.70...83.40) | LFG-setting: solidale con carcassa: Idle delivery: |
| 8th speed 1/min: 2500 | Shutoff | 1st speed 1/min: 400 |
| 9th speed 1/min: 2500 | electromagnet Volt: 12 | Shutoff |
| 10th speed 1/min: 2500 | Overflow quantity cm ³ /10s: (55.60...139.00) | electromagnet Volt: 12 |
| 11th speed 1/min: 2500 | Shutoff | Del. quantity cm ³ /: 6.00...10.00 1000s.: (4.00...12.00) |
| 12th speed 1/min: 2500 | Delivery-quant. and breakaway char.: | High Idle: |
| 2nd speed 1/min: 2750 | | 1st speed 1/min: 500 |
| Shutoff | | Shutoff |
| | | electromagnet Volt: 12 |

Del. quantity cm³/: 8.50...12.50
1000s.: (6.50...14.50)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...6.00
1000s.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/ : 10.00..12.00*
difference 1000s.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.00..15.00#
difference 1000s.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00'
difference 1000s.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70#
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50'
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000s.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000s.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000s.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.3...5.7 |
| MS | mm: 1.3...1.7 |
| SVS max. | mm: 3.0 |
| XK | mm: 17.0...19.0 |
| XL | mm: 8.7...12.1 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

On initial measurement, screw in
residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting
screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
 Edition : 11.06.92
 replaces : 14.07.88
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2200L243-5
 Type number : 0 460 494 232
 Customer Part-No. :

Customer-specific information
 Customer : OPEL

Engine : 2,3+ ; OMEGA M. EGR

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
 Setting value mm: 4.30...4.70
 AFB/AFB valve Volt: 12

Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
 Setting value bar: 4.00...4.60
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Full-load det. with charge press.:

Speed 1/min: 1200
 Del. quantity cm³/
 1000S.: 43.00...44.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 270
 Del. quantity cm³/
 1000S.: 10.00...14.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2450
 Del. quantity cm³/
 1000S.: 21.00...27.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 52.00...78.00
 mind 1000S.: 52.00
 KSB/AFB Valve Volt: 12
 Shutoff electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement: .

Speed 1/min: 1200

Inj.-qty. cm³/ difference 1000s.: 4.50...12.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1200
 TD-travel difference mm: 0.50...0.70
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Inspection-pump test specifications
 Test specifications in parentheses
 Timing-device characteristic:
 2nd speed 1/min: 2200
 TD travel mm: 9.10...9.90
 mm: (8.80...10.20)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1200
 TD travel mm: 4.30...4.70
 mm: (3.80...5.20)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 1.90...2.70
 mm: (1.60...3.00)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 5th speed 1/min: 600
 TD travel mm: 0.60...1.40
 mm: -
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 8th speed 1/min: 1200
 TD travel mm: 3.80...6.20
 mm: (3.80...6.20)
 Shutoff electromagnet Volt: 12
 9th speed 1/min: 300
 TD travel mm: 2.70...4.30
 mm: (2.50...4.50)
 Shutoff electromagnet Volt: 12
 10th speed 1/min: 800

TD travel mm: 2.80...5.20
 mm: (2.80...5.20)
 Shutoff electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 2200
 Supply-pump pressure bar: 6.50...7.10
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1200
 Supply-pump pressure bar: 4.00...4.60
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 800
 Supply-pump pressure bar: 3.00...3.60
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 600
 Supply-pump pressure bar: 2.40...3.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 600
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 2nd speed 1/min: 2200
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 2700
 KSB/AFB valve Volt: 12
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 2600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.00...12.00
 1000S.: (3.00...13.00)
 5th speed 1/min: 2450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 21.00...27.00
 1000S.: (20.00...28.00)
 9th speed 1/min: 2200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 34.80...37.80
 1000S.: (34.00...38.60)
 12th speed 1/min: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.00...44.00
 1000S.: (41.20...45.80)
 20th speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.50...36.50
 1000S.: (32.00...38.00)

 Mech. shutoff:

 Electr. shutoff:

 1st speed 1/min: 270
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

 Idle delivery:

 1st speed 1/min: 270
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)
 Dispersion cm³/: 3.0
 1000S.: (3.0)
 2nd speed 1/min: 320

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.00...9.00
 1000S.: (2.50...9.50)
 4th speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...2.60
 1000S.: (0.00...2.60)

 Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

 3rd speed 1/min: 1200
 Inj.-qty. cm³/: 4.50...12.50
 difference 1000S.: (4.50...12.50)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1200
 TD-travel : 0.50...0.70
 difference mm: (0.50...0.70)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

 Automatic starting fuel delivery:

 1st speed 1/min: 130
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.00...78.00
 1000S.: (52.00...78.00)

 2nd speed 1/min: 230
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...35.00
 1000S.: (25.00...35.00)

 4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Det. quantity cm³/: 52.00...78.00
1000s.: (52.00...78.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.6...6.0 |
| MS | mm: 1.8...2.0 |
| XK | mm: 17.0...19.0 |
| XL | mm: 9.2...12.6 |
| Ya | mm: 37.9...39.9 |
| Yb | mm: 36.6...42.0 |

Overflow restriction 0.55 mm - Part No.

..303 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 16.06.92
replaces : 01.02.89
Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R309-1
Type number : 0 460 494 247
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 740

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
Del. quantity cm³/
1000s.: 36.00...37.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm³/
1000s.: 2.00...6.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000s.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 52.00...92.00
mind 1000s.: 52.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000s.: 11.00...15.00*
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125

TD-travel
difference mm: 0.50...0.70*

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1125

Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...5.00
1000s.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 2.50...10.50
1000s.: (1.50...11.50)
5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 20.00...26.00
1000s.: (19.00...27.00)
9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 35.30...37.30
1000s.: (34.00...38.60)
10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 34.50...36.50
1000s.: (33.20...37.80)
12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 36.00...37.00
1000s.: (34.20...38.80)
20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 34.10...37.10
1000s.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 6.00...10.00
1000s.: (4.00...12.00)

High Idle:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 8.50...12.50
1000s.: (6.50...14.50)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 2.00...6.00
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³: 10.00..12.00#
difference 1000S.: (10.00..12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³: 11.00..15.00*
difference 1000S.: (11.00..15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³: 2.00..8.00'
difference 1000S.: (2.00..8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70*
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50'
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30#
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12

Del. quantity cm³: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

| Designation | |
|-------------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.3...5.7 |
| MS | mm: 1.3...1.7 |
| SVS max. | mm: 3.0 |
| Ya | mm: 37.8...41.8 |
| Yb | mm: 45.1...54.9 |

Remarks:

Overflow restriction 0.55 mm - Part No.
.303

On initial measurement, screw in
residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting
screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 16.06.92
 replaces : 11.05.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R303-1
 Type number : 0 460 494 250

Customer-specific information
 Customer : FIAT-AUTO

Engine : M710 CT 19.0 PRISMA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 6.00...6.40
 AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 1000
 Setting value bar: 5.60...6.20

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:
 Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 53.00...54.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 41.00...42.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 450
 Del. quantity cm³/
 1000S.: 11.00...15.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.5
 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 4.00...6.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 32.00...38.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...80.00
mind 1000s.: 50.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm³/
difference 1000s.: 5.00...7.00*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.80...1.00#
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: 0.10...0.30*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.60...9.40
mm: (8.30...9.70)
KSB/AFB
valve Volt: 12
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 6.00...6.40
mm: (5.70...6.70)
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 3.50...6.50
mm: (3.50...6.50)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3.90...5.50
mm: (3.20...6.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80
KSB/AFB
valve Volt: 12
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.60...4.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 90.30...131.90
quantity cm³/10s: (90.30...131.90)

2nd speed 1/min: 2100
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 111.10...194.40
 quantity cm³/10s: (111.10...194.40)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 400
 LDA-stroke mm: 6.2
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 53.50...54.50
 1000S.: (51.50...56.50)

2nd speed 1/min: 2650

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...7.00
 1000S.: -

3rd speed 1/min: 2450

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 12.00...20.00
 1000S.: (11.00...21.00)

4th speed 1/min: 2300

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32.00...38.00
 1000S.: (31.00...39.00)

5th speed 1/min: 2100

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.50...52.50
 1000S.: (48.50...53.50)

6th speed 1/min: 1500

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 53.00...54.00
 1000S.: (51.50...55.50)

7th speed 1/min: 800

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 40.00...42.00
 1000S.: (38.50...43.50)

8th speed 1/min: 800

Charge press. hPa: 1000
 KSB/AFB

valve Volt: 12

Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 56.00...59.00
 1000S.: -

9th speed 1/min: 600

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 41.00...42.00
 1000S.: (39.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 KSB/AFB
 valve Volt: 12

Damper set qty.:

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 11.00...15.00
 1000S.: (9.50...16.50)
 Dispersion cm³/: 2.5
 1000S.: (2.5)

Residual:

1.Rotacao 1/min: 700
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.00...6.00
 1000S.: (3.00...7.00)

| | | |
|-------------------------------------|------------------------|---|
| 2nd speed | 1/min: 550 | Shutoff electromagnet Volt: 12 |
| KSB/AFB | | Del. quantity cm ³ : 50.00...80.00 |
| valve | Volt: 12 | 1000s.: (50.00...80.00) |
| Shutoff | | |
| electromagnet Volt: 12 | | |
| Del. quantity cm ³ : | 7.50...10.50 | |
| 1000s.: - | | |
| Load-dependent start of delivery: | | |
| Inj.-qty.dif.measurement: | | |
| 1st speed | 1/min: 1500 | Cut-in |
| Inj.-qty. cm ³ / | : 8.00...16.00# | min voltage : 10.0 |
| difference | 1000s.: (8.00...16.00) | Rated voltage : 12.0 |
| KSB/AFB | | |
| valve | Volt: 12 | Mounting and assembly dimensions: |
| Shutoff | | Designation |
| electromagnet Volt: 12 | | K mm: 3.2...3.4 |
| 2nd speed | 1/min: 1500 | KF mm: 5.6...6.0 |
| Inj.-qty. cm ³ / | : 5.00...7.00* | MS mm: 1.0...1.4 |
| difference | 1000s.: - | LDA stroke mm: 6.2 |
| TD-travel dif.measurement: | | XK mm: 18.8...20.8 |
| correttore anticipo iniezione (SV): | | XL mm: 10.0...13.4 |
| 1st speed | 1/min: 1500 | Ya mm: 37.2...39.2 |
| TD-travel | : 0.80...1.00# | Yb mm: 37.5...43.5 |
| difference | mm: (0.80...1.00) | |
| KSB/AFB | | Overflow restriction 0.75 mm - Part No. |
| valve | Volt: 12 | .343...344 |
| Shutoff | | Operate control lever after each |
| electromagnet Volt: 12 | | manifold-pressure compensator pressure |
| SP press.-dif.measurement: | | change. |
| pipa di mandata (FP): | | |
| 1st speed | 1/min: 1500 | * Correction at adjusting nut (46) |
| Supply pump- | | |
| pressure | : 0.10...0.30* | |
| difference | bar: - | |
| Automatic starting fuel delivery: | | |
| 1st speed | 1/min: 220 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: 12 | | |
| Del. quantity cm ³ : | 52.00...78.00 | |
| 1000s.: | (52.00...78.00) | |
| 2nd speed | 1/min: 300 | |
| KSB/AFB | | |
| valve | Volt: 12 | |
| Shutoff | | |
| electromagnet Volt: 12 | | |
| Del. quantity cm ³ : | 35.50...45.50 | |
| 1000s.: | (35.50...45.50) | |
| 4th speed | 1/min: 100 | |
| KSB/AFB | | |
| valve | Volt: 12 | |

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 17.06.92
replaces : 01.02.89
Calibrating oil : ISO-4113

Injection pump : VE4/9F2350R309-2
Type number : 0 460 494 251
Customer Part-No. :

Customer-specific information
Customer : RMUR

Engine : J8S-736 u.740

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
Del. quantity cm³/
1000s.: 36.00...37.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm³/
1000s.: 2.00...6.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000s.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 52.00...92.00
mind 1000s.: 52.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000s.: 11.00...15.00'
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125

TD-travel

difference mm: 0.50...0.70'

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement

pompa di mandata (FP)

1.Speed 1/min: 1125

Supply pump

pressure

difference bar: 0.10...0.30*

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000s.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000s.: (1.50...11.50)
5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.00
1000s.: (19.00...27.00)
9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.30...37.30
1000s.: (34.00...38.60)
10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...36.50
1000s.: (33.20...37.80)
12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...37.00
1000s.: (34.20...38.80)
20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.10...37.10
1000s.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000s.: (4.00...12.00)
Dispersion cm³/: 2.5
1000s.: (3.0)

High Idle:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...12.50
1000s.: (6.50...14.50)

Residual:

1.Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 2.00...6.00
1000s.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³: 10.00..12.00*
difference 1000s.: (10.00..12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³: 11.00..15.00'
difference 1000s.: (11.00..15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³: 2.00...8.00#
difference 1000s.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70'
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50#
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 45.00...85.00
1000s.: (45.00...85.00)

2nd speed 1/min: 310

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 25.00...45.00
1000s.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 52.00...92.00
1000s.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

| | |
|----------|-----------------|
| K | mm: 3.2...3.4 |
| KF | mm: 5.3...5.7 |
| MS | mm: 1.3...1.7 |
| SVS max. | mm: 2.3 |
| Ya | mm: 37.8...41.8 |
| Yb | mm: 45.1...54.9 |

Remarks:

:
Overflow restriction 0.55 mm - Part No.
.303

On initial measurement, screw in
residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting
screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 12.06.92
 replaces : 19.07.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R256-2
 Type number : 0 460 494 253
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : M705 LA 19.0

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 1.90...2.30
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 5.30...5.90
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Del. quantity cm³/
 1000S.: 28.00...29.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 390
 Del. quantity cm³/
 1000S.: 10.00...14.00
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³/: 2.5
 1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2500
 Del. quantity cm³/
 1000S.: 18.50...24.50

Start:

Speed 1/min: 100
 Del. quantity cm³/: 55.00...81.00
 mind 1000S.: 55.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1000
 Charge press hPa: 12
 Inj.-qty. cm³/
 difference 1000S.: 8.00...14.00
 Shutoff

electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1000

TD-travel
 difference mm: 0.50...0.70
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300
 TD travel mm: 7.80...8.60
 mm: (7.50...8.90)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1000
 TD travel mm: 1.90...2.30
 mm: (1.40...2.80)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 1.10...1.90
 mm: (0.80...2.20)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 2000
 TD travel mm: 6.60...7.40
 mm: (6.20...7.80)
 Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 TD travel mm: 4.20...5.00
 mm: (3.90...5.30)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
 Supply-pump pressure bar: 7.10...7.70
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Supply-pump pressure bar: 5.30...5.90
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 600
 Supply-pump pressure bar: 3.10...3.70
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000s.: (0.00...6.00)
 3rd speed 1/min: 2650
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.50...11.50
 1000s.: (3.00...13.00)
 5th speed 1/min: 2500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.50...24.50
 1000s.: (17.50...25.50)
 9th speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 29.30...31.70
 1000s.: (28.20...32.80)
 10th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.80...30.20
 1000s.: (26.70...31.30)
 12th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.00...29.00
 1000s.: (26.20...30.80)
 20th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.90...31.90
 1000s.: (27.40...33.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 390
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000s.: (7.00...17.00)
 Dispersion cm³/: 2.5
 1000s.: (2.5)
 2nd speed 1/min: 440
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000s.: (0.00...6.00)

4th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1000
Inj.-qty. cm³/: 8.00...14.00
difference 1000S.: (8.00...14.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.50...0.70
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 48.00...74.00
1000S.: (48.00...74.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...45.00
1000S.: (35.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...81.00
1000S.: (55.00...81.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 5.6...6.0
KF mm: 3.2...3.4
MS mm: 1.6...2.0
Ya mm: 37.2...39.2
Yb mm: 47.6...56.0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 03.03.92
replaces : 03.10.86
Calibrating oil : ISO4113

Injection pump : VE4/9F2075R126
Type number : 0 460 494 121

Customer-specific information
Customer : PEUGEOT

Engine : XD 3S

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil!

return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 5.80...6.20

Supply-pump pressure

Speed 1/min: 1500
Charge press. hPa: 800
Setting value bar: 5.60...6.20

Full-load del. with charge press.:

Speed 1/min: 1500

Charge press. hPa: 800
Del. quantity cm³/
1000S.: 53.50...54.50
Dispersion cm³/: 2.0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 40.00...41.00

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 20.00...24.00
Del. quantity cm³/: 2.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2300
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 26.50...32.50

Start:

Speed 1/min: 100
Del. quantity cm³/: 67.00
mind 1000S.: -

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
Charge press. hPa: 800
TD travel mm: 0.80...1.60
mm: (0.00...2.40)
2nd speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 2.50...3.30
mm: (2.20...3.60)
3rd speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: 5.80...6.20
mm: (5.00...7.00)
4th speed 1/min: 2000
Charge press. hPa: 800
TD travel mm: 7.80...8.60
mm: (7.00...9.40)

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 800

Supply-pump
pressure bar: 3.40...4.00

2nd speed 1/min: 1500

Charge press. hPa: 800

Supply-pump

pressure bar: 5.60...6.20

3rd speed 1/min: 2000

Charge press. hPa: 800

Supply-pump

pressure bar: 7.10...7.70

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 41.60...83.30

quantity cm³/10s: (26.60...98.30)

2nd speed 1/min: 2075

Charge press. hPa: 800

Overflow : 55.50...138.80

quantity cm³/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750

Charge-air pressure-setting

point hPa: 300

LDA-stroke mm: 4.5

Del. quantity cm³/: 47.50...48.50

1000s.: (43.00...52.00)

2nd speed 1/min: 2600

Charge press. hPa: 800

Del. quantity cm³/: 0.00...3.00

1000s.: -

3rd speed 1/min: 2300

Charge press. hPa: 800

Del. quantity cm³/: 26.50...32.50

1000s.: (21.50...37.50)

4th speed 1/min: 2200

Charge press. hPa: 800

Del. quantity cm³/: 40.50...46.50

1000s.: (35.50...51.50)

5th speed 1/min: 2000

Charge press. hPa: 800

Del. quantity cm³/: 51.20...53.20

1000s.: (47.70...56.70)

Damper set qty.:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 W39
 Edition : 08.10.91
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 400 075 929

 Injection pump
 Pump designation : PES5M55C320RS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300M64-18
 Governer no. : 0 420 021 159

 Cust. part no. : T3

 Customer-spec. information
 Customer : MB-PKW

 Engine : OM602A-USA

 1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 469 990 351

 Inlet press., bar : 1.00

 Test nozzle holder assembly : 0 681 343 009

 Opening pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

EASY SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.85)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP**1st version**

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED**1st version****Control lever**

position degrees: 50...0

3rd rack travel in: 8,5..8,9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER**POSITION**

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1**Control lever**

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.5

Testing:
Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.50
Speed rpm : 520...620
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING
Speed rpm : 380
Rack travel in mm : 4,2...4,4
: (4,1...4,5)

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 13.00...13.20
3rd speed rpm : 2200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement
Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 49.5...51.0
1000 s: (48.5...52.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.0...8.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12.7...14.1)
Del.quantity cm³/ : -
1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457...2.517 V must be attained.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 35,5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 33,0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
 $KDEP\ 1077 = 17.3^\circ \dots 17.7^\circ$
($17.2 \dots 17.8^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633 \dots 1.639$ (1.635...1.637) V is indicated. Tighten fastening screws

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

Combination no. : 0 400 075 959

Injection pump
 Pump designation : PES5M55C320RS166
 EP type number : 0 410 055 980
 Governor
 Governor design. : RSF340/2300M64-1
 Governor no. : 0 420 021 050

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.8)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.0

Testing:
Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.50
Speed rpm : 525...625
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING
Speed rpm : 380
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 14.00...14.10
2nd speed rpm : 1600
Rack travel in m: 13.30...13.50
3rd speed rpm : 2200
Rack travel in m: 12.80...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement
Speed 1/min : 1000
1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³ / : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³ / : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³ / : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³ / : 31.0...35.0
1000 s: (30.0...36.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 4.90...5.10
Del.quantity cm³ / : 5.0...6.0
1000 s: (4.0...8.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12.4...13.8)
Del.quantity cm³ / : -
1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³ / : -
min. 1000 s: 52.0 / 1,8A

Remarks:

:
Sliding sleeve pre-travel = 6.5 mm

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2,531...2,590
(2,502...2,620) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 18,5...19,5 (17,5...20,5)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633...1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2,531...
2,590 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

 Combination no. : 0 400 075 980

 Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M64
 Governor no. : 0 420 021 050

 Cust. part no. : T3

 Customer-spec. information
 Customer : MB-PKW

 Engine : OM602A / ALDA

 1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 469 990 351

 Inlet press., bar : 1.00

 Test nozzle holder assembly : 0 681 343 009

 Opening pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.5

Testing:
Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING
Speed rpm : 380
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement
Speed 1/min : 1000
1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 5.5...6.5
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12.4...13.8)
Del.quantity cm³/ : -
1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0 / 1.8A

Remarks:

Pin projection = 15.60...16.70 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 07.11.86
 Test oil : ISO-4113

Combination no. : 0 400 076 980

Injection pump
 Pump designation : PES6M55C320RS157
 EP type number : 0 410 056 993
 Governor
 Governor design. : RSF315/2300M64-10
 Governor no. : 0 420 021 085

Customer-spec. information

Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test cil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 1000
Rack travel in mm : 1.7...1.8

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement
Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm³ : 2.50
1000 s: (3.00)

Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm³/ : -
1000 s: (42.0...49.9)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0 / 1.8A

Remarks:
:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 46.5°,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 23.0...24.0 (22.0...25.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 22.0...23.0 (21.0...24.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

Combination no. : D 400 076 987

Injection pump
 Pump designation : PES6M55C320RS157
 EP type number : D 410 056 993
 Governor
 Governor design. : RSF315/2300M64-2
 Governor no. : D 420 021 059

Customer-spec. information

Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)

Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE
REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm³/ : -
1000 s: (42.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0

Remarks:

:
Sliding sleeve pre-travel = 6.5 mm

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
- Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.472...2.532
(2.442...2.562) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 23.0...24.0 (22.0...25.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633...1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

Combination no. : 0 400 076 992

Injection pump
 Pump designation : PES6M55C320RS157
 EP type number : 0 410 056 993
 Governor
 Governor design. : RSF315/2300M64
 Governor no. : 0 420 021 044

Customer-spec. information
 Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)

Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm³/ : ~
1000 s: (42.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : ~
min. 1000 s: 52.0

Remarks:

:
Sliding sleeve pre-travel = 6.5 mm

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
 $KDEP 1077 = 19.3^\circ \dots 19.7^\circ$
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.472...2.532
(2.442...2.562) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 23.0...24.0 (22.0...25.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 14.11.89
 Test oil : ISO-4113

Combination no. : 0 400 076 996

Injection pump
 Pump designation : PES6M55C320RS155
 EP type number : 0 410 056 997
 Governor
 Governor design. : RSF315/2300M62
 Governer no. : 0 420 021 035

Customer-spec. information
 Customer : MB-PKW

Engine : OM603

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.8...8.2

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 0.9...1.0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 290

Rack travel in mm : 5.5

Testing:

Speed rpm : 220
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.40...5.60
Rack travel in mm : 1.50
Speed rpm : 620...720
Speed rpm : 1000
Maximum rack travel: 1.00

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.30...11.40
2nd speed rpm : 1800
Rack travel in m: 10.90...11.10
3rd speed rpm : 2200
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800
Del.quantity cm³/ : 34.0...35.5
1000 s: (33.0...36.5)
Spread cm³ : 2.50
1000 s: (3.00)
Speed rpm : 2200
Del.quantity cm³/ : 33.5...35.5
1000 s: (32.5...36.5)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 55.0...0.0
1000 s: (55.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Speed rpm : 2500
Rack travel in mm : 7.80...8.20
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.6...14.0)
Del.quantity cm³/ : -
1000 s: (32.0...40.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 55.0 / 1.8A

Remarks:

:
Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2,043...2,103
(2,013...2,132) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 18,0...19,0 (17,0...20,0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.487...
2.547 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 c 6
 Edition : 10.07.92
 Replaces : 26.02.88
 Test oil : ISO-4113

Combination no. : 0 401 848 796

Injection pump
 Pump designation : PE8P110A320LS3842-1
 EP type number : 0 411 818 716
 Governor
 Governor design. : RQ300/1050PA187-18
 Governer no. : 0 421 801 430

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 481 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.8

Del.quantity cm³/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1350
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:

Speed rpm : 200
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm³/ : 136.0...140.0
1000 s: (133.0...143.0)
Spread cm³ : 7.00
1000 s: (10.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a16
 Edition : 22.05.92
 Replaces : 02.91
 Test oil : ISO-4113

Combination no. : 0 402 036 745

Injection pump
 Pump designation : PES6P110A720/3LS3131

EP type number : 0 412 016 734

Governor

Governor design. : RQ300/1100PA722-1

Governer no. : 0 421 801 461

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 12.50...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.0

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1155
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 100
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 113.0...117.0
1000 s: (110.0...120.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 026 752

Injection pump
 Pump designation : PES6P120A720/3LS3255
 -1

EP type number : 0 412 026 756

Governor

Governor design. : RAV300...1000PA876
 -13

Governer no. : 0 421 814 010

Customer-spec. information

Customer : MAN

Engine : D2866LE102

1st version kW : 260.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

M02

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.90...10.10
 2nd speed rpm : 300
 travel mm : 1.50...1.70
 3rd speed rpm : 500
 travel mm : 3.30...3.90
 4th speed rpm : 800
 travel mm : 6.80...7.20
 5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1110
 Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:
1st rack travel in: 13.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 254...262

Testing:
Speed rpm : 200
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 290...400

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 14.70...14.80
2nd speed rpm : 1000
Rack travel in m: 14.50...14.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 210
Rack travel in m: 11.80...11.90
3rd pressure hPa : 570

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: MAN-NR. 3-7191

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 036 753

Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3

EP type number : 0 412 016 734
 Governor
 Governor design. : RQV300...1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90

2nd speed rpm : 425

travel mm : 3.30...3.70

3rd speed rpm : 920

travel mm : 5.70...6.10

4th speed rpm : 1155

travel mm : 7.90...8.40

5th speed rpm : 1255

travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 9.10...11.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100

Del.quantity : 137.0...139.0
1000 : (134.5...141.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 200
Minimum rack trave: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 5
 Edition : 22.05.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump
 Pump designation : PES6P120A320RS419-2
 EP type number : 0 412 026 048
 Governor
 Governor design. : RQ275/950PA753-1
 Governor no. : 0 421 801 377

Customer-spec. information

Customer : RVI
 Engine : MIDS/PS062045 FC

1st version kW : 144.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.70...8.80

Del.quantity cm³/ : 12.0...12.2

100 s: (11.7...12.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 700

Del.quantity : 120.0...122.0

1000 : (117.0...125.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

Testing:

1st rack travel in: 7.20

Speed rpm : 1015...1030

2nd rack travel in: 4.00

Speed rpm : 1050...1080
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.30

Testing:
Speed rpm : 200
Minimum rack trave: 6.00
Speed rpm : 250
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 8.70...8.80
2nd speed rpm : 950
Rack travel in m: 8.00...8.20
3rd speed rpm : 750
Rack travel in m: 8.30...8.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 8.70...8.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 240
Rack travel in m: 8.45...8.55

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 950
Del.quantity cm3/ : 140.0...144.0
1000 s: (137.0...147.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 7.20
Speed rpm : 1015...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 k
 Edition : 22.05.92
 Replaces : 11.90
 Test oil : ISO-4113

Combination no. : 0 402 046 340

Injection pump
 Pump designation : PES6P120A320RS525
 EP type number : 0 412 026 058
 Governor
 Governor design. : RQV300...1050PA955
 Governer no. : 0 421 813 856

Customer-spec. information

Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.40...9.50

Del.quantity cm³/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.0...5.4

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----|-----------------|
| 1st speed | rpm | : 1050 |
| travel mm | | : 8.00...8.20 |
| 2nd speed | rpm | : 275 |
| travel mm | | : 0.80...1.20 |
| 3rd speed | rpm | : 430 |
| travel mm | | : 3.40...4.00 |
| 4th speed | rpm | : 1400 |
| travel mm | | : 11.00...12.00 |

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1240
 Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

| | | |
|--------------|-----|-------------------|
| Speed | rpm | : 1050 |
| Del.quantity | | : 138.0...140.0 |
| 1000 | | : (135.0...143.0) |

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:
1st rack travel in: 8.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 244...252

Testing:
Speed rpm : 175
Minimum rack trav: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 310...430

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 126.0...134.0
 1000 s: (123.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 17.0...23.0
 1000 s: (14.0...26.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 046 836

 Injection pump
 Pump designation : PES6P120A320RS3303
 EP type number : 0 412 026 755
 Governor
 Governor design. : RQV275...1050PA1038K
 Governor no. : 0 421 815 313

 Customer-spec. information
 Customer : RVI

 Engine : MIDR 062045 J/3

 1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Test nozzle holder assembly : 1 688 901 105

 Opening pressure, bar : 207...210

 Orifice plate diameter mm : 0,8

 Test lines : 1 680 750 089

 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

| | | |
|-----------------------------------|-----------------|---------------|
| 1st speed | rpm | : 1050 |
| Rack travel in mm : 10.90...11.00 | | |
| Del.quantity cm ³ / | | : 15.3...15.5 |
| 100 s: (15.0...15.8) | | |
| Spread | cm ³ | : 0.5 |
| 100 s: (0.9) | | |

| | | |
|--------------------------------|-----------------|-------------|
| 2nd speed | rpm | : 275.0 |
| Rack travel in mm : 5.0...5.4 | | |
| Del.quantity cm ³ / | | : 1.9...2.3 |
| 100 s: (1.6...2.6) | | |
| Spread | cm ³ | : 0.8 |
| 100 s: (1.2) | | |

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 1140
 travel mm : 9.50...9.70
 2nd speed rpm : 275
 travel mm : 1.80...2.00
 3rd speed rpm : 380
 travel mm : 3.40...4.00
 4th speed rpm : 740
 travel mm : 6.40...6.80
 5th speed rpm : 1480
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1270
 Rack travel in mm : 8.60...11.20

FULL LOAD DELIV. AT FULL LOAD STOP

| | | |
|------------------------|-----|-----------------|
| 1st version | | |
| Speed | rpm | : 1050 |
| Del.quantity | | : 153.0...155.0 |
| 1000 : (150.0...158.0) | | |

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 268...276

Testing:

1st rack travel in: 9.90
Speed rpm : 1215...1225
2nd rack travel in: 6.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 221...229

Testing:

Speed rpm : 175
Minimum rack trave: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 280...380

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 131.0...137.0
 1000 s: (128.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
 1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 19.0...23.0
 1000 s: (16.0...26.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIN
 Edition : 26.06.92
 Replaces : G3.92
 Test oil : ISO-4113

Combination no. : 0 402 048 707

Injection pump
 Pump designation : PES8P120A320RS3300
 EP type number : 0 412 028 707
 Governor
 Governor design. : RQV350...1400PA1028
 Governer no. : 0 421 813 987

Customer-spec. information
 Customer : INCANTIERI

Engine : 1308 V

1st version kW : 500.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 7- 8- 4- 5-
 6- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 15.30...15.40

Del.quantity cm³/

100 s: (28.4...29.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 7.9...8.3
 Del.quantity cm³/

100 s: (3.3...4.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1410
 travel mm : 8.30...8.50
 2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 520
 travel mm : 3.20...3.80
 4th speed rpm : 910
 travel mm : 5.10...5.50
 5th speed rpm : 1750
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1490
 Rack travel in mm : 13.00...15.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750
 Aneroid pressure h: 1000

Del.quantity : 287.0...289.0
1000 : (284.0...292.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 14.30
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1600...1630
4th rack travel in: 1750
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 250
Minimum rack trave: 9.60
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION
Speed rpm : 350...700

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 15.30...15.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...11.00
2nd pressure hPa : 500
Rack travel in m: 13.70...13.80
3rd pressure hPa : 400
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1350
Del.quantity cm³/ : 275.0...281.0
1000 s: (272.0...284.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.30
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 405.0...435.0
1000 s: (401.0...439.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.90...8.30
Del.quantity cm³/ : 36.0...42.0
1000 s: (33.0...45.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 066 700

Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3

EP type number : 0 412 016 734
 Governor
 Governor design. : RSV350...1100P0A487
 -9
 Governor no. : 0 421 833 316

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:
1st rack travel in: 10.00
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

Remarks:

:

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.9

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 111.0...115.0
1000 s: (108.0...118.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.80...7.00
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 4.50
1000 s: (7.00)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 066 701

Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3

EP type number : 0 412 016 734

Governor
 Governor design. : RSV350...1100P0A487
 -6

Governor no. : 0 421 833 311

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Phasing
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 14.4...14.6

100 s: (14.1...14.8)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.3

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 144.0...146.0

1000 : (141.5...148.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:
1st rack travel in: 10.70
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

Remarks:

:

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 123.0...127.0
1000 s: (120.0...130.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.10...7.30
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 4.50
1000 s: (7.00)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 21.05.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 076 746

Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV625...1100P2A534-
 10
 Governor no. : 0 421 833 375

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 AZ 030

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/

100 s: (15.1...15.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/

100 s: (2.5...3.3)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 153.0...155.0

1000 : (151.0...157.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:
1st rack travel in: 11.00
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 625
Rack travel in mm : 5.00...5.20

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 700
Rack travel in m: 11.50...11.60
3rd pressure hPa : 915
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 119.5...123.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks: : JOHN DEERE # RE47398

Adjustment without torque-control
spring retainer with 1 mm. less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 748
 Injection pump
 Pump designation : PE6P110A720RS3305
 EP type number : 0 412 016 740
 Governor
 Governor design. : RSV300...1100P1A555
 Governer no. : 0 421 833 379
 Customer-spec. information
 Customer : LIEBHERR
 Engine : D 926 TI
 1st version kW : 210.0
 Rated speed : 2200
TEST BENCH REQUIREMENTS
 Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____
BEGINNING OF DELIVERY
 Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 18.3...18.5

, 100 s: (18.0...18.7)

Spread cm³ : 0.4

, 100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.0...1.6

, 100 s: (0.7...1.8)

Spread cm³ : 0.4

, 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del.quantity : 183.0...185.0

, 1000 : (180.5...187.5)

Spread cm³ : 4.00

, 1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 12.90

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1075...1105

3rd rack travel in: 4.00

Speed rpm : 1090...1120

4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.10
2nd speed rpm : 500
Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 550

1st pressure hPa : —
Rack travel in m: 12.20...12.40
2nd pressure hPa : 640
Rack travel in m: 13.40...13.60
3rd pressure hPa : 510
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: —
Speed rpm : 550
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 638 807
 Injection pump
 Pump designation : PE8P120A120LS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RQ300/1100PA134-2
 Governer no. : 0 421 801 364
 Customer-spec. information
 Customer : SNF
 Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.5...20.7
 100 s: (20.2...21.0)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.4
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 205.0...207.0
 1000 : (202.0...210.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 12.80
 Speed rpm : 1150...1155
 2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1150...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 230.0...260.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 21.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 638 807
 Injection pump
 Pump designation : PE8P120A120LS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RQ300/1100PA134-3
 Governer no. : 0 421 801 655
 Customer-spec. information
 Customer : SNF
 Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.5...20.7
 100 s: (20.2...21.0)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.4
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 205.0...207.0
 1000 : (202.0...210.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.0

Testing:
 1st rack travel in: 12.80
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.30

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 230.0...260.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 638 808

Injection pump
 Pump designation : PE8P120A120LS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RQV250...1100PA785-3
 Governer no. : 0 421 814 004

Customer-spec. information
 Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.40

2nd speed rpm : 355

travel mm : 1.70...2.20

3rd speed rpm : 410

travel mm : 2.20...2.70

4th speed rpm : 1150

travel mm : 8.30...8.70

5th speed rpm : 1390

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 12.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Testing:

Speed rpm : 150
Minimum rack travel: 8.30
Speed rpm : 250
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 360...420

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 790

Rack travel in m: 12.80...12.90

3rd pressure hPa : 490

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 230.0...260.0
1000 s: (226.0...264.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 b
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 640 812

Injection pump
 Pump designation : PE12P120A520LS7820
 EP type number : 0 412 620 814
 Governor
 Governor design. : RQV350...1150PA870-4
 Governer no. : 0 421 813 717

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|----------------|
| 1st speed | rpm | : 350 |
| | travel mm | : 1.30...1.80 |
| 2nd speed | rpm | : 600 |
| | travel mm | : 3.30...3.80 |
| 3rd speed | rpm | : 960 |
| | travel mm | : 5.30...5.80 |
| 4th speed | rpm | : 1206 |
| | travel mm | : 7.90...8.40 |
| 5th speed | rpm | : 1291 |
| | travel mm | : 9.80...10.30 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 309.0...311.0
1000 : (306.0...314.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 13.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.80...8.10

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.40...9.50
2nd pressure hPa : 1100
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

N01

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³/ : 303.0...313.0
1000 s: (300.0...316.0)

Spread cm³ : 10.00
1000 s: (15.0)

Aneroid pressure h: 1800

Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *

1000 s: (237.0...246.0)

Spread cm³ : 10.00
1000 s: (15.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 128.0...130.0
1000 s: (125.0...133.0)

Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RQV350...1150PA870-4
 Governer no. : 0 421 813 717

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.10...15.20

Del.quantity cm³/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|----------------|
| 1st speed | rpm | : 350 |
| | travel mm | : 1.30...1.80 |
| 2nd speed | rpm | : 600 |
| | travel mm | : 3.30...3.80 |
| 3rd speed | rpm | : 960 |
| | travel mm | : 5.30...5.80 |
| 4th speed | rpm | : 1206 |
| | travel mm | : 7.90...8.40 |
| 5th speed | rpm | : 1291 |
| | travel mm | : 9.80...10.30 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 309.0...311.0
1000 : (306.0...314.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.80...9.90
2nd pressure hPa : 1100
Rack travel in m: 14.00...14.20

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

N03

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm³ : 10.00
1000 s: (15.0)

Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 10.00
1000 s: (15.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22/0 c 3
 Edition : 26.06.92
 Replaces : 06.91
 Test oil : ISO-4113

Combination no. : 0 402 640 829

Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RQV350...900PA870-14
 Governor no. : 0 421 813 935

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 500.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0
 Rack travel in mm : 5.3...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|-----------------|
| 1st speed | rpm | : 350 |
| | travel mm | : 1.30...1.80 |
| 2nd speed | rpm | : 655 |
| | travel mm | : 4.80...5.30 |
| 3rd speed | rpm | : 960 |
| | travel mm | : 8.70...9.20 |
| 4th speed | rpm | : 1120 |
| | travel mm | : 11.00...12.00 |

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 950
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1600
Del.quantity : 236.0...238.0
1000 : (233.0...241.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.90
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.10...8.40

Measurement
Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 9.30...9.50
2nd pressure hPa : 700
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm³/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 640 838

Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039-1K
 Governor no. : 0 421 815 315

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 Phasing : 180-225-240-285-300-
 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 30.4...30.6
 100 s: (30.1...30.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.0...9.2
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm³ : 0.8
 100 s: (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.3...7.5
 Del.quantity cm³/ : 5.2...6.0 *
 100 s: (-)
 Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|-----------------|
| 1st speed | rpm | : 300 |
| | travel mm | : 2.00...2.20 |
| 2nd speed | rpm | : 450 |
| | travel mm | : 4.00...4.40 |
| 3rd speed | rpm | : 800 |
| | travel mm | : 6.70...7.10 |
| 4th speed | rpm | : 1200 |
| | travel mm | : 10.30...10.50 |
| 5th speed | rpm | : 1400 |
| | travel mm | : 13.00...14.00 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1280
Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 270...390

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 200
Rack travel in m: 9.30...9.40
3rd pressure hPa : 800
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7226

- * applies to cylinders 4, 5, 6, 8, 10 and 12
- ** applies for cylinders 1, 2, 3, 7, 9 and 11

Start-of-delivery blocking 12° after start of delivery of cylinder no. 1.

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 640 839

Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RQV300...1150PA1039K
 Governer no. : 0 421 815 314

Customer-spec. information
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12-1-5-9-8-3-
 4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.70...14.80

Del.quantity cm³/ : 33.4...33.6

100 s: (33.1...33.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.0...9.2
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)

Spread cm³ : 0.8
 100 s: (1.2)

3rd speed rpm : 300
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 5.2...5.6 *

100 s: (-)

Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----------|-----------------|
| 1st speed | rpm | : 300 |
| | travel mm | : 2.00...2.20 |
| 2nd speed | rpm | : 450 |
| | travel mm | : 4.00...4.40 |
| 3rd speed | rpm | : 800 |
| | travel mm | : 6.70...7.10 |
| 4th speed | rpm | : 1200 |
| | travel mm | : 10.30...10.50 |
| 5th speed | rpm | : 1400 |
| | travel mm | : 13.00...14.00 |

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1270
Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 334.0...336.0
1000 : (331.0...339.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 270...390

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 200
Rack travel in m: 9.30...9.40
3rd pressure hPa : 800
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7227

* applies to cylinders 4, 5, 6, 8 ,10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Start-of-delivery blocking 12° after
start of delivery of cylinder no. 1.

APPLICATION

Ship

N11

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 798

Injection pump
 Pump designation : PE6P120A320LS7854
 EP type number : 0 412 626 872
 Governor
 Governor design. : RQV350...95CPA870-17
 Governor no. : 0 421 814 005

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

| | | |
|-----------|-----|----------------|
| 1st speed | rpm | : 350 |
| travel mm | | : 1.30...1.80 |
| 2nd speed | rpm | : 570 |
| travel mm | | : 3.90...4.40 |
| 3rd speed | rpm | : 850 |
| travel mm | | : 5.70...6.20 |
| 4th speed | rpm | : 1008 |
| travel mm | | : 7.40...7.90 |
| 5th speed | rpm | : 1110 |
| travel mm | | : 9.80...10.30 |

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1200
Del.quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 250
Minimum rack trave: 7.70
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 430...480

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 10.40...11.50
3rd pressure hPa : 600
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:
:

APPLICATION

Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 799

Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/950PA1031-5
 Governor no. : 0 421 801 657

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 275
Rack travel in m: 11.20...11.40
3rd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1005

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 910

Injection pump
 Pump designation : PE6P120A320RS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQV200...1100PA712-5
 Governor no. : 0 421 813 951

Customer-spec. information
 Customer : SCANIA

Engine : DS9 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...5.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.2...1.6

100 s: (-)

Spread cm³ : 0.5

100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.50...3.10

3rd speed rpm : 650

travel mm : 5.40...6.00

4th speed rpm : 1145

travel mm : 8.90...9.10

5th speed rpm : 1280

travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 180.0...182.0

1000 : (177.0...185.0)

Spread cm³ : 6.00
 1000 : (9.00)

Del.quantity cm³/ : 114.0...118.0
 1000 s: (112.0...120.0)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 12.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 480
Rack travel in m: 12.30...12.40
3rd pressure hPa : 220
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 163.0...171.0
 1000 s: (161.0...173.0)
Aneroid pressure h: -
Speed rpm : 500

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...140.0
 1000 s: (-)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972
 Governer no. : 0 421 801 542

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1.00
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0 *
1000 s: (46.0...74.0)
Rack travel in mm : 10.30...10.60

Remarks:

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 916

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -17
 Governor no. : 0 421 813 884

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 637

travel mm : 4.90...5.40

3rd speed rpm : 830

travel mm : 6.00...6.50

4th speed rpm : 1107

travel mm : 8.30...8.80

5th speed rpm : 1218

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 917
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/950PA971
 Governor no. : 0 421 801 543

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA
 1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
 1st rack travel in: 13.90
 Speed rpm : 990...1005
 2nd rack travel in: 4.00
 Speed rpm : 1070...1100
 4th rack travel in: 1200
 Speed rpm : 0.00...1.40

LOW IDLE 1
 Setting point w/out bumper spring
 Speed rpm : 300
 Rack travel in mm : 6.6

Testing:
 Speed rpm : 200
 Minimum rack trave: 8.50
 Speed rpm : 300
 Rack travel in mm : 6.30...6.90
 Rack travel in mm : 2.00
 Speed rpm : 380...420

TORQUE CONTROL
 Dimension a mm : 0.35
 2nd speed rpm : 950
 Rack travel in m: 14.90...15.10
 3rd speed rpm : 800
 Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 1200
 Rack travel mm : 15.20...15.40

Measurement
 Speed 1/min : 500
 1st pressure hPa : -
 Rack travel in m: 10.10...10.40
 2nd pressure hPa : 250
 Rack travel in m: 10.60...10.70
 3rd pressure hPa : 750
 Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version
 Aneroid pressure h: 1200
 Speed rpm : 950
 Del.quantity cm3/ : 236.0...239.0
 1000 s: (233.0...242.0)
 Spread cm3 : 8.00
 1000 s: (12.0)
 Aneroid pressure h: -

Speed rpm : 500
 Del.quantity cm3/ : 134.0...136.0
 1000 s: (131.0...139.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 13.90
 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 40.0...70.0 *
 1000 s: (36.0...74.0)

Remarks:

* Set warm-start quantity at
 excess-fuel stop for starting
 on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 917X
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/950PA971
 Governor no. : 0 421 801 543
 Cust. part no. : 0180740402
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA
 1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

| | | |
|--------------------------------|-----------------|---------|
| 1st speed | rpm | : 550 |
| <hr/> | | |
| Rack travel in mm | : 15.20...15.40 | |
| <hr/> | | |
| Del.quantity cm ³ / | : 24.0...24.2 | |
| <hr/> | | |
| 100 s: | (23.7...24.5) | |
| <hr/> | | |
| Spread | cm ³ | : 0.6 |
| <hr/> | | |
| 100 s: | (0.9) | |
| <hr/> | | |
| 2nd speed | rpm | : 300.0 |
| Rack travel in mm | : 6.3...6.9 | |
| Del.quantity cm ³ / | : 1.6...2.2 | |
| <hr/> | | |
| 100 s: | (1.3...2.5) | |
| Spread | cm ³ | : 0.6 |
| <hr/> | | |
| 100 s: | (1.0) | |

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1200
 Del.quantity : 240.0...242.0
 1000 : (237.0...245.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 750
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950

Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0 *
1000 s: (36.0...74.0)

* Set warm-start quantity at excess-fuel stop for starting on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 922

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-2
 Governor no. : 0 421 801 556

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : -
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Anercid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1105

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm